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ABSTRACT

Trustworthy information about career assessment instruments and their value for career counseling is difficult to obtain. This text contains information and reviews of a wide range of assessment instruments. The decisions as to what instruments to include for review were based on input from an advisory committee, a review of the literature and of publisher catalogues, and the results of a survey of users. The principles underlying the decisions to select instruments for review included selecting previously reviewed instrument that have undergone extensive revisions or update, new instruments that appear to have promise of extensive use, instruments that could be used by employers to make hiring or advancement decisions, and instruments with proven utility for persons with disabilities of disadvantages. Fifty-two instruments in forty-nine test reviews comprise the heart of this volume. These are divided into six categories: Comprehensive Aptitude/Achievement and Companion Measures; Interest; Values and Satisfaction; Career Development/Maturity; Personality; and Instruments for Disabled and Disadvantaged Populations. Reviews begin with publisher-provided information, followed by a brief critical review of the instrument's strengths and limitations. Also provided is practical information which potential users can refer to in order to gauge the usefulness of an instrument. (RJM)

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A Counselor's Guide to Career Assessment Instruments

Jerome T. Kapes Marjorie Moran Mastie Edwin A. Whitfield

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National Career Development Association

A COUNSELOR'S GUIDE TO CAREER ASSESSMENT INSTRUMENTS

Third Edition

EDITED BY:

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The National Career Development Association
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Edwin A. Whitfield is an Associate Director with the Ohio Department of Education. His responsibilities include providing leadership and coordination for school guidance and counseling programs and curriculum assessment initiatives in the state of Ohio. Prior to his current position he served as a coordinator of guidance and counseling in California, and as a teacher and counselor in Iowa and Ohio. He received his B.A. degree from Loras College, his M.Ed. from Ohio University and Ph.D. from the University of Iowa. Dr. Whitfield has been actively involved in professional associations serving as NVGA (NCDA) President as well as President of NCDA divisions in California and Ohio. He served as Editor of the *Vocational Guidance Quarterly* (now the *CDQ*) for six years, as Coordinator of NCDA publications and as Chairperson of the AACD (ACA) Council of Journal Editors. He has received the NCDA Merit Award twice. Dr. Whitfield has published works addressing career development, assessment, evaluation, and guidance program planning and implementation.

Table of Contents

Page

Acknowledgements xi

Preface xiii
Dale Prediger and Howard Splete

I. A COUNSELOR'S GUIDE: INTRODUCTION TO THE THIRD EDITION 1
Jerome T. Kapes, Marjorie M. Mastie and Edwin A. Whitfield

II. THE COUNSELOR'S ROLE IN CAREER ASSESSMENT 13
Edwin L. Herr

III. SELECTING A CAREER ASSESSMENT INSTRUMENT 23
William A. Mehrens

IV. USING ASSESSMENT INSTRUMENTS IN CAREER COUNSELING: CAREER ASSESSMENT AS COMPASS, CREDENTIAL, PROCESS AND EMPOWERMENT 31
Marjorie M. Mastie

V. ASSESSMENT COMPETENCIES AND RESPONSIBILITIES: A CHECKLIST FOR COUNSELORS 41
Nancy J. Garfield and Dale J. Prediger

VI. COMPREHENSIVE APTITUDE/ACHIEVEMENT AND COMPANION MEASURES 49

ACT Career Planning Program 50
Scarvia B. Anderson, reviewer

Adult Basic Learning Examination, 2nd Edition 57
Robert T. Williams, reviewer

Apticom 63
Joe A. Green, reviewer

Armed Services Vocational Aptitude Battery Career Exploration Program 71
Patricia B. Elmore and Richard W. Bradley, reviewers

Career Assessment Program 78
Gary W. Peterson, reviewer

Career Survey 86
George Domino, reviewer

Differential Aptitude Tests with Career Interest Inventory 90
Victor L. Willson and Elizabeth Stone, reviewers

Employee Aptitude Survey 99
James E. Alwood, reviewer

Occupational Aptitude Survey and Interest Schedule–2 104
Christopher Borman, reviewer

Tests of Adult Basic Education 111
Steven J. Osterlind, reviewer

USES General Aptitude Test Battery and USES Interest Inventory 115
Brian Bolton, reviewer

Work Keys Assessments 124
Cathy Scruggs, reviewer

World of Work Inventory 131
Karl F. Botterbusch, reviewer

VII. INTEREST INVENTORIES 137

Campbell Interest and Skill Survey 138
Dale R. Fuqua and Jody L. Newman, reviewers

Career Assessment Inventory—Enhanced Version and Vocational Version 144
Nicholas A. Vacc and J. Scott Hinkle, reviewers

Career Directions Inventory 151
Darrell L. Sabers, reviewer

Career Occupational Preference System Interest Inventory 156
Pat Nellor Wickwire and Burton Faldet, reviewers

Chronicle Career Quest 162
David L. Livers, reviewer

College Major Interest Inventory 167
Richard W. Johnson, reviewer

Harrington-O'Shea Career Decision-Making System–Revised 172
Timothy R. Vansickle, reviewer

Interest Determination, Exploration and Assessment System 178
Robert J. Miller and Diane Hoffbauer, reviewers

Jackson Vocational Interest Survey 183
David A. Jepsen, reviewer

Kuder General Interest Survey, Form E 189
William A. Mehrens, reviewer

Kuder Occupational Interest Survey, Form DD 194
Edwin L. Herr and Jeffrey S. Ashby, reviewers

Ohio Vocational Interest Survey, 2nd Edition 200
Vicki L. Campbell, reviewer

Self-Directed Search 206
M. Harry Daniels, reviewer

Strong Interest Inventory 213
Bert W. Westbrook and Jennifer J. Norton, reviewers

VIII. VALUES AND SATISFACTION MEASURES 219

Minnesota Importance Questionnaire 220
Stephanie L. Brooke and Joseph C. Ciechalski, reviewers

Minnesota Satisfaction Questionnaire 226
Donald G. Zytowski, reviewer

Salience Inventory 231
Jo-Ida C. Hansen, reviewer

Values Scale 236
Robert B. Slaney, reviewer

IX. CAREER DEVELOPMENT/MATURITY MEASURES 241

Adult Career Concerns Inventory 242
James Rounds, reviewer

Assessment of Career Decision Making 248
Richard S. Sharf, reviewer

Career Beliefs Inventory 253
Janet E. Wall, reviewer

Career Decision Scale 258
Lenore W. Harmon, reviewer

Career Development Inventory 263
James W. Pinkney and Cathleen M. Bozik, reviewers

Career Maturity Inventory 268
Charles C. Healy, reviewer

X. PERSONALITY MEASURES 273

California Psychological Inventory 274
John O. Crites and Daryl Sander, reviewers

Myers-Briggs Type Indicator 281
Bruce Thompson and Cheryl M. Ackerman, reviewers

Occupational Stress Inventory 288
Thomas E. Powell, reviewer

Personality Research Form 294
Howard E. A. Tinsley, reviewer

Sixteen PF Personal Career Development Profile 300
Gerald T. Olson and Susan G. Matlock, reviewers

XI. INSTRUMENTS FOR DISABLED AND DISADVANTAGED POPULATIONS 307

McCarron-Dial System 308
David C. Solly, reviewer

Pictorial Inventory of Careers 315
Jerry L. Wircenski, reviewer

Prevocational Assessment Screen 320
Patricia S. Lynch and Linda H. Parrish, reviewers

Reading-Free Vocational Interest Inventory 325
Zita M. Cantwell, reviewer

Social and Prevocational Information Battery-Revised 331
Carol Kehr Tittle and Deborah Hecht, reviewers

Talent Assessment Program 336
Clarence D. Brown, reviewer

Wide Range Interest Opinion Test 341
Stephen W. Thomas, reviewer

XII. VOCATIONAL CARD SORTS 347
Robert B. Slaney, Wendy J. Moran and John C. Wade

XIII. USING PORTFOLIOS FOR CAREER ASSESSMENT 361
Patricia Jo McDivitt

XIV. A COMPARISON OF THE ASSESSMENT COMPONENTS OF FIFTEEN COMPUTER-ASSISTED CAREER GUIDANCE SYSTEMS 373
James P. Sampson, Jr., Robert C. Reardon, Caroline K. Wilde, Debra S. Norris, Gary W. Peterson, Scott J. Strausberger, Jeffrey W. Garis, Janet G. Lenz and Denise E. Saunders.

XV. ADDITIONAL CAREER ASSESSMENT INSTRUMENTS 381
Jerome T. Kapes and Tammi Vacha-Haase

APPENDIX A: Sources of Information About Testing and Career Assessment 423
David A. Jepsen and Jerome T. Kapes

APPENDIX B: Addresses of Publishers 435

APPENDIX C: Responsibilities of Users of Standardized Tests 445
Code of Fair Testing Practices in Education 457
Multicultural Assessment Standards: A Compilation for Counselors 463

APPENDIX D: A Counselor's Guide User's Matrix 471
Jerome T. Kapes and Tammi Vacha-Haase

INDEX 491

Acknowledgements

Those of our readers who have followed the progress of *A Counselor's Guide* since its first publication in 1982 will notice several differences in this third edition. Among these are the addition of a third editor and the formal involvement of the Association for Assessment in Counseling (AAC) through their Committee to Screen Career Guidance Instruments and significant contributions to the reviews, chapters and appendices. Even with this additional support, however, the task of completing this endeavor was formidable, and could not have been brought to a successful conclusion without the help of many others who deserve recognition.

As with the previous two editions, we once again benefited from the advice of our advisory committee. Although we did not get together for group meetings, we sought and received the counsel of these professionals by mail and phone on many occasions. Those advisory committee members who have served us for all three editions include Chris Borman, Dave Jepsen, Linda Parrish, Dale Prediger, and Bert Westbrook. Additional advisors for this edition, some of whom participated in the second edition, included Scarvia Anderson, Bob Bauernfeind, Karl Botterbusch, Zita Cantwell, Burt Faldet, Laurie Gunning, Ed Herr, Julie Miller, Gerry Olson, Bob Read, Tim Vansickle, Janet Wall and Don Zytowski.

Much of the day-to-day work necessary to produce the *Guide* was carried out by several graduate students at Texas A&M University. Primary among these was Susan Matlock who was responsible for word processing, communications, editing, library research and almost anything else required to keep the project on track. Another graduate assistant with a key role was Tammi Vacha-Haase, who devoted much time to the Additional Instruments chapter and the User's Matrix. Additional graduate student help was provided by Dinnah Funderburg and Chris Edmundson.

Support from NCDA was provided by Niel Carey, Executive Director, who handled communications between NCDA and the editors, and Pat Nellor Wickwire, Media Committee Chair, who, along with her committee, read several drafts and made helpful suggestions. Other NCDA officers who supported our efforts included past or current presidents Carole Minor, Deborah Bloch, Ken Hoyt and Howard Splete, and Treasurer Roger Lambert.

Also very important to the success of *A Counselor's Guide* were the Buros Institute at the University of Nebraska-Lincoln and PRO-ED of Austin, Texas, publishers of the *Mental Measurements Yearbooks* and *Test Critiques*, respectively, who agreed to allow their reviewers to abridge their previously published manuscripts for inclusion in the *Guide*.

Much of the support necessary to a project of this nature, that consumed approximately three years of time, has come from the institutions which employed the three of us. At Texas A&M we are especially indebted to the Department of Educational Psychology and particularly past department heads Mike Ash and Bruce Thompson and current acting head Pat Alexander. In addition, the Vocational Special Needs Information Center at Texas A&M and especially Pat Lynch provided special populations reference material and space to house project graduate assistants. Also, Fred Welch, who was head of the Department of Vocational and Industrial Education at Penn State during the summer of 1991 and his secretarial staff provided significant support during the planning stages when the coordinating editor (Kapes) was on sabbatical at that institution. At Washtenaw Intermediate School District, we are grateful to Michael Emlaw, Superintendent, for his support of this project over many years. We are also appreciative of the Ohio Department of Education, whose policies and atmosphere support and promote the independent inquiry necessary for a project such as this. Ted Sanders, Ohio Superintendent of Public Instruction, and Roger Trent, who directs Ohio's statewide assessment efforts, have provided a climate that facilitated this professional activity.

There were many others, too numerous to mention here, who contributed to this third edition of *A Counselor's Guide*. Chief among these are the reviewers, chapter authors and publishers of the instruments reviewed. Contributors to the chapters and reviews have volunteered their efforts for the good of the profession. Also, the publishers have provided the information preceding each review and have generously supplied the necessary instrument information to the reviewers and editors. For readers who found their work particularly helpful, we suggest you mention this to them personally when the opportunity presents itself.

Although they were not directly involved in creating the third edition of *A Counselor's Guide*, we could not have devoted the extensive amount of time necessary over the three years of the project without the forbearance and support of our immediate families. To Evelyn and Becky Kapes, David Mastie, and Marjorie and Eric Whitfield, we promise to spend more time with you now that the third edition has gone to press. Lastly, we dedicate this book to our families and to our parents, Elmer and Elizabeth Kapes, Larry and Donna Moran, and Edwin and Mathilda Whitfield.

JTK
MMM
EAW

Preface

The two previous editions of this outstanding resource have been widely used by counselors, educators and researchers in the field of career development. This book builds on those editions by adding new instruments and by providing new reviews of instruments included in those editions. Much of the material addressing the selection and use of career assessment instruments has also been expanded and updated. Chapters on card sorts, portfolio assessment and computer-based guidance systems have been added. Also, the additional instruments chapter has been greatly expanded, and the user's matrix has been redesigned to provide easy identification of instruments to fit particular needs.

This edition of *A Counselor's Guide to Career Assessment Instruments* is an example of the many productive, collaborative efforts of the National Career Development Association (NCDA) and the Association for Assessment in Counseling (AAC), divisions of the American Counseling Association. We deeply appreciate the vision, professional expertise, and tremendous dedication brought to this endeavor by Jerome Kapes, Marjorie Mastie and Edwin Whitfield. Our thanks also go to the many individuals who contributed as publishers, chapter authors or reviewers.

Dale J. Prediger
President, 1993–94
Association for Assessment
in Counseling

Howard Splete
President, 1993–94
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CHAPTER I

A Counselor's Guide: Introduction to the Third Edition

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BACKGROUND

Third Edition Development

The first edition of *A Counselor's Guide* was published in 1982, and the second edition in 1988. This third edition maintains the six-year time span between the second and first editions. Given the rapid changes which continue to occur in career assessment instruments and in the professions that utilize them, it appears that six years is the maximum time allowable between revisions if this work is to remain current. The time needed to plan and produce *A Counselor's Guide* is approximately three years, with decisions about topics and instruments to include made relatively early in the process, while other content such as the additional instruments chapter and appendices continues to evolve until press time. All of the decisions concerning what to include were influenced by an advisory committee whose members are listed in the acknowledgements. However, the ultimate responsibility for the content of the third edition rests with the three editors.

The most notable difference in the third edition may be its size. The first edition contained 259 pages and the second contained 351 pages. For this edition, the decision was made to add approximately 150 pages with the additional space used to expand the length of the reviews, include more instrument reviews, and add several more chapters. From a content perspective, more emphasis was given to achievement tests and measures which could be used by employers, to computer-based assessments, and to a broader range of alternative assessments such as card sorts and portfolios. Also, the very popular *Additional Career Assessment Instruments* chapter has been expanded again to include 245 instruments, and the *User's Matrix* has been revised to provide additional information. Most of the chapters and all of the reviews have different authors from either of the previous editions. Overall, there are 52 separate instruments included in 49 reviews by 63 authors and co-authors using a standard format that includes: Description, Use in Counseling, Technical Considerations, Computer-Based Version (if applicable), Overall Critique, and References. The reviews include 17 instruments that were not reviewed in either of the previous editions and another six instruments that have been extensively revised or updated since the second edition.

Reviews and Reviewers

The decisions as to what instruments to include for review were based on input from the advisory committee, a review of the literature and publisher catalogues, and, for instruments for disabled or disadvantaged populations, on the results of a survey of users in Texas. The principles underlying the decisions to select instruments for review were to include:

1) Major instruments identified by a consensus of the advisory committee.
2) Previously reviewed instruments that have undergone extensive revision or update.
3) New instruments that appear to have promise of extensive use.
4) Instruments, not otherwise included, that could be used by employers to make hiring or advancement decisions or facilitate career development.
5) Instruments with proven utility for persons with disabilities or disadvantages based on the survey conducted in Texas.

Given the rapid expansion of computer-based versions of career assessment instruments, it was decided to include a section in each review to cover these versions. Also, *Chapter XIV* covers the use of instruments within computer-based guidance systems. Additional information on computer-based instruments can be obtained in Krug (1993) *Psychware Sourcebook: A Reference Guide to Computer-Based Products for Behavioral Assessment in Psychology, Education and Business* (see *Appendix A* for further information).

The process of selecting instrument reviewers was similar to that followed for the previous editions. As was the case for the second edition, permission was obtained from the respective publishers for use of reviewers who had previously published reviews in either the *Mental Measurements Yearbooks* or in *Test Critiques*. Typically, these reviewers made extensive revisions in their previously published manuscripts both to update the information and to accommodate the *Counselor's Guide* format. In addition, the Association for Assessment in Counseling (AAC) Committee to Screen Career Guidance Instruments provided reviewers for some instruments which it had previously reviewed and for some newly developed instruments. Other members of AAC and NCDA, or professionals who publish in the journals of these associations, were recruited to write reviews for new or revised instruments for which no previous reviews were available. Lastly, other reviewers with unique expertise and experience with a particular instrument were also used. As before, all reviews published in *A Counselor's Guide* were subjected to an external evaluation by the editors or members of the advisory committee. However, the opinions expressed by the reviewers are their own.

CONTEXT INFORMATION FOR USERS

Before deciding to employ psychometric instruments for career assessment there is prerequisite contextual information the user needs to possess. This includes a knowledge of the instruments available for the particular intended use, access to sources of good information about the available instruments and awareness of the various legal, ethical and social considerations that impact the career assessment process. A brief discussion of each of these context considerations follows.

Instrument Availability and Use

Trustworthy information about what career assessment instruments are most used for career counseling and related purposes is difficult to obtain. The primary reason for this difficulty is that most users are familiar with only a few of the many instruments available. When users are asked to rate or rank the usefulness or applicability of a large number of instruments, they tend to place the ones they use at the top and then rank others by name recognition only somewhere below these choices. Several surveys conducted in the past have included instruments that were no longer available, yet they still received relatively large numbers of nominations for use, presumably because their names were familiar. In previous editions of *A Counselor's Guide*, the editors have reported such surveys conducted by others (Engen, Lamb & Prediger, 1982; Zytowski & Warman, 1982) or by themselves (Kapes & Mastie, 1988, p.7). A list of these instruments appeared in the second edition. Given the dated and somewhat unreliable nature of this information, especially at the lower end of the ranking, it is not included here in its entirety. It may be useful, however, to know that in the list cited above the most used measures (in alphabetical order) for aptitude were the *Armed Services Vocational Aptitude Battery* (ASVAB), *Differential Aptitude Tests* (DAT) and *General Aptitude Test Battery* (GATB) while the most used interest measures were the *Kuder Occupational Interest Survey* (KOIS/ Kuder DD), *Self Directed Search* (SDS) and *Strong-Campbell Interest Inventory* (SCII/SII). Ranked below these were a number of other interest, values and career development measures.

Two more up-to-date listings of instrument use are available and are provided below. However, there is a question about their representativeness based on the observations offered above as well as the nature of the samples and surveys used. A description of each of these studies along with some information about the sample and survey method used is included so that readers may make their own judgments about the usefulness of the information.

A recent study, by Watkins, Campbell and Nieberding (1994), although not available to the editors in planning *A Counselor's Guide*, appears to confirm the decisions made concerning instruments to be included in this edition. In this study, 1000 APA members who identified counseling as their specialty were surveyed about their vocational assessment practices. Based on a 64% usable return rate, the respondents indicated they spent about 8% of their professional time on vocational assessment across six work settings. They also provided reasons for using vocational assessment procedures and why counseling psychology students should learn about their use. The table ranking the vocational assessment procedures most used by counseling psychologists in six work settings is reproduced on the following page. An examination of this table reveals that, for this fairly select group of practitioners, the SII, SDS, KOIS, DAT and GATB again surfaced as the most used instruments. This is similar to previous findings with other users except for the absence of the ASVAB, which would not be an appropriate instrument for this group to use. Further down the list, it can be observed that the majority of instruments listed are reviewed in *A Counselor's Guide* with the few that are not reviewed being included in the *Additional Instruments* chapter. The only instrument on the list that is not included in the *Guide* is the *Cognitive Vocational Maturity Test*, which is not commercially available. While the top instruments appear to be among the most used in all settings, greater variation occurs among settings farther down the list of instruments.

Another recent study of vocational assessment instruments reported in the literature was conducted by Kapes, Parrish and Funderburg (1993) to obtain user information in the specialized area of students with special needs. In this study, the authors surveyed all school systems in Texas through the 20 regional Educational Service Centers. Because of the sampling method used, it is not possible to estimate the potential sample size. The 130 surveys that were returned, however, represent a geographical cross-section of the state and the multiple uses typical with this population. Given the position titles of the respondents, it is likely that the survey information is biased in the direction of persons with disabilities versus those with disadvantages.

Since this information was available in planning the third edition, it heavily influenced the selection of instruments for the chapter focusing on disabled and disadvantaged populations. The 12 most frequently used instruments (in alphabetical order) based on the survey are as follows:

Apticom
Career Ability Placement Survey (CAPS)
Career Occupational Preference System (COPS)
Differential Aptitude Test (DAT)
McCarron-Dial System (MDS)
Occupational Aptitude Survey & Interest Schedule (OASIS)
Prevocational Assessment Screen (PAS)
Pictorial Inventory of Careers (PIC)
Reading-Free Vocational Interest Inventory (RFVII)
Social & Prevocational Information Battery (SPIB)

RANKINGS OF VOCATIONAL ASSESSMENT PROCEDURES MOST FREQUENTLY USED BY COUNSELING PSYCHOLOGISTS ACROSS SIX WORK SETTINGS

Instrument	Six Sample Composite	Counseling Center	Private Practice	University Department	Other	CMHC/Clinic	Hospital
Strong Interest Inventory	1	1	1	1	1	1	1
Self-Directed Search	2	2	2	2	2	2	2.5
Kuder Occupational Interest Survey	3	3	3	3	3	3	2.5
Differential Aptitude Test	4	6	4	4	5	5	4
General Aptitude Test Battery	5	7.5	6	5	6	8	6.5
Career Assessment Inventory	6	11	5	10	4	5	5
Vocational Preference Inventory	7	9	7	9	7	8	6.5
Work Values Inventory	8	4.5	10	6	10	13	8.5
Vocational Card Sorts	9	4.5	8.5	8	13.5	13	12
Temperament & Values Inventory	10	12	11	12	13.5	13	8.5
Career Maturity Inventory	11	10	17.5	7	17	13	16
Wide Range Interest-Opinion Test	12	26	8.5	21	8	5	16
Career Decision Scale	13.5	17.5	15	13	10	10	12
Career Development Inventory	13.5	15	12.5	11	19	13	12
California Occupational Preference System	15.5	15	12.5	18	13.5	17	23.5
Harrington-O'Shea	15.5	15	17.5	14	10	—	19.5
My Vocational Situation	17	7.5	22	17	23.5	8	—
Jackson Vocational Interest Inventory	18	13	15	19.5	17	17	12
Minnesota Importance Questionnaire	19	19	22	15.5	20.5	17	12
Occupational Stress Inventory	20	17.5	15	19.5	13.5	—	19.5
Armed Services Vocational Aptitude Battery	21	24	25.5	15.5	17	—	—
Hall Occupational Orientation Inventory	22	20	19	25.5	23.5	—	23.5
Minnesota Satisfaction Questionnaire	23	24	27	22	20.5	—	16
Ohio Vocational Interest Survey	24	24	20	25.5	23.5	—	23.5
USES Interest Inventory	25	27.5	24	25.5	23.5	—	19.5
Adult Career Concerns Inventory	26	21.5	25.5	23	27.5	19	23.5
Cognitive Vocational Maturity Test	27	27.5	22	28	26	—	19.5
Salience Inventory	28	21.5	28	25.5	27.5	—	—

Source: Watkins, C. E., Campbell, V. L., & Nieberding, R. (1994). The practice of vocational assessment by counseling psychologists. *The Counseling Psychologist, 22*(1), 115–128. Copyright © 1994 by the Division of Counseling Psychology. Reprinted with permission of Sage Publications, Inc.

Talent Assessment Program (TAP)
Wide Range Interest-Opinion Test (WRIOT)

As with other surveys reporting use of career assessment instruments, the two described here have limitations and should not be overinterpreted. The results are highly influenced by who responded and the nature of their professional activities. Furthermore, newly developed instruments were not included in these surveys.

Sources of Information about Available Instruments

When the first edition of *A Counselor's Guide* was published in 1982, there was only one comprehensive source of information about career assessment instruments available. That source was the Buros Institute's publication, *Test in Print II* and its companion set of reviews, the *Eighth Mental Measurements Yearbook* (MMY), which was published in 1978. Since that time, the Buros Institute has published *Tests in Print III* (1983) and the *Ninth, Tenth and Eleventh Mental Measurements Yearbook* (1985, 1989, 1992). Also, the Institute has established an on-line data base through Bibliographic Retrieval Service (BRS) that makes reviews for subsequent yearbooks available as they are received.

A second major source of test information and reviews became available in 1983 when Test Corporation of America released its first volume of *Tests*, which was subsequently updated in 1987 and 1991. Also, the corporation began publication of *Test Critiques* (TC) in 1984. Since that time, nine volumes have been released, the last three of which were published by PRO-ED in 1988, 1990, and 1992. The reviews in TC differ somewhat from those provided by the MMY in that more coverage is given to a description of the test, and information in addition to the traditional technical evaluation covered by the Buros reviews is provided. The MMY, however, usually provides reviews from more than one reviewer, while TC publishes only one review of each test. Also, each edition of the MMY is comprehensive and covers most published tests in the U.S. and other English-speaking countries, while TC is selective and cumulative and includes the most-used instruments in psychology, education and business.

In addition to these two major providers of test information and reviews, there are other more focused sources of information that the career counselor may find useful. Included among these are Educational Testing Service's (ETS) *Test Collection Catalogues*, several volumes of which describe instruments relevant to career assessment. The publications of the Stout Vocational Rehabilitation Institute—Materials Development Center at the University of Wisconsin-Stout specialize in assessments for persons with disabilities. Other sources of this nature include VOC-AIM in Lathrup Village, Michigan, which publishes vocational assessment materials specifically for use with special needs students in school settings and the *Vocational Assessment Handbook* (Kapes, Parrish, Vansickle, & Vansickle, 1988) which focuses on both disabled and disadvantaged populations served in vocational education.

The professional journals continue to publish reviews. Those likely to contain reviews or articles about the use of career assessment instruments are the *Journal of Counseling and Development*, the *Career Development Quarterly*, the *Journal of Career Assessment*, and the *Measurement and Evaluation in Counseling and Development Journal*. Also, the Committee to Screen Career Guidance Instruments which is sponsored by the Association for Assessment in Counseling (AAC) publishes test reviews, many on recently developed or revised instruments, in its organization newsletter, *AAC Newsnotes*.

Those desiring additional information about the sources described here as well as other sources of information about testing and career assessment are encouraged to consult *Appendix A*, which contains an annotated bibliography of available sources.

Legal, Ethical and Social Considerations

Today's user of career assessment instruments needs to consider many more external factors than did those who pioneered the field. Very few laws existed almost 50 years ago when the post World War II expansion of the use of tests in career counseling began. Since that time, both state and federal laws have been enacted that either govern, promote, or sometimes even require their use. Federal legislation that has promoted the use of tests for career counseling programs can be traced back to 1958 when the *National Defense Education Act* was passed with its emphasis on counseling and guidance in the public schools. This law was followed by *The Elementary and Secondary Education Act of 1965* and its later amendments that continued to promote school guidance and counseling activities, including testing and assessment.

A second stream of federal legislation that at first promoted vocational or career guidance and eventually required the use of tests in the public schools began with the *Vocational Education Act of 1963* and was expanded by its subsequent amendments in 1968 and 1976. The 1984 *Carl D. Perkins Vocational Education Act*, included in section 204 (c) a specific requirement for handicapped and disadvantaged students that stated:

> Each student who enrolls in a vocational education program and to whom subsection b) applies shall receive (1) assessment of interests, abilities, and special needs of such student with respect to completing successfully the vocational education program . . .

In 1990, the *Carl D. Perkins Vocational and Applied Technology Education Act* replaced the earlier Perkins Act, and while the requirement to assess "interests, abilities and special needs" is not explicitly stated in this act, provisions to provide guidance and counseling services, including assessment, to disabled and disadvantaged populations have been strengthened.

Operating alongside recent federal vocational education legislation has been *The Education of All Handicapped Children Act* of 1975 and its subsequent amendments including the *Individuals with Disabilities Act* of 1990. These laws have required the use of tests and other assessment devices as input to constructing Individualized Education Plans (IEP's) for individuals with disabilities through age 21 in the public schools. Since students with disabilities in the public secondary schools are served in vocational education programs, tests targeted to this group have expanded greatly in quantity, if not in quality.

Emerging over somewhat the same time period as vocational education and handicapped/disability legislation, the Career Education movement also contributed to the use of tests in career guidance and counseling. Beginning in 1971, this movement was promoted by separate legislation in 1974, 1976 and 1977. At the present, its major impact in assessment is probably the promotion of the use of career assessment instruments in elementary and middle schools.

While the above-described legislation promoted the use of assessment as part of the career guidance and counseling function of the schools, other laws were passed that regulated its use. In 1979, the Department of HEW's Office of Civil Rights issued federal *Vocational Education Programs Guidelines for Eliminating Discrimination and Denial of Services on the Basis of Race, Color, National Origin, Sex and Handicap*. These guidelines, based on three previous civil rights laws (Civil Rights Act of 1964, Title IX of the Education Amendments of 1972 and section 504 of the Rehabilitation Act of 1973), prohibit the use of tests in ways that would limit a person's options to pursue training in vocational education programs. The 1974 *Family Educational Rights and Privacy Act* (The Buckley Amendment) and the National Institute of Education (NIE) (1978) *Guidelines for Assessment of Sex Bias and Sex Fairness in Career Interest Inventories* also govern or influence the use of tests.

Professional associations have also provided guidance for the use of tests in career counseling as well as in other areas. *The Standards for Educational and Psychological Tests* (1985) published by the American Psychological Association (APA) on behalf of a joint committee of APA, the American Educational Research Association (AERA) and the National Council for Measurement in Education (NCME), has a separate section entitled *Test Use in Counseling*. A supplement to these standards provides *Guidelines for Computer-Based Tests and Interpretations* (1986). The National Board for Certified Counselors (NBCC) with its specialty sub-group the National Board for Certified Career Counselors (NBCCC) have also produced a code of ethics that includes a section on Measurement and Evaluation.

In 1980, the American Personnel and Guidance Association (now the American Counseling Association - ACA) published its policy statement *Responsibilities of Users of Standardized Tests* (RUST). This document, which contains much information relevant to the use of career assessment instruments, was revised in 1989. A similar publication, *Code of Fair Testing Practices in Education* (APA, 1988), was developed by a Joint Committee on Testing Practices which involved six professional associations including ACA and AAC. Also, Prediger (1993) on behalf of AAC/ACA edited a compilation of standards with relevance for multicultural populations entitled *Multicultural Assessment Standards: A Compilation for Counselors*. These last three documents are included in their entirety in *Appendix C*. An abbreviated checklist based on the standards and guidelines described above is included as *Chapter V*.

USING THE GUIDE

The success of the first two editions of the *Counselor's Guide* provides evidence of its popularity and use in the counseling profession. Readers are encouraged to use this edition of the *Guide* to plan and implement assessment strategies to enhance the professional assistance provided to students and clients. The book contents provide the user ready access to information about appropriate selection and use of career assessment instruments.

Chapters II through *IV* lead the reader through a process necessary to use fully the main body of information contained in this guide. Edwin Herr (*Chapter II*) provides an overview of career assessment and addresses the counselor's role in the career assessment process. William Mehrens follows in *Chapter III* by providing a review of the factors that must be considered in selecting career assessment instruments and Marjorie Mastie (*Chapter IV*) explains the various contexts and purposes for which career assessment instruments can be used. Immediately preceding the reviews of instruments, Nancy Garfield and Dale Prediger (*Chapter V*) provide an informal self-evaluation method for users to assess their own competencies, responsibilities and practices in career assessment.

Fifty-two instruments in 49 test reviews comprise the heart of this volume. These are divided into six categories to facilitate perusal and selection of appropriate instruments: *Chapter VI*—Comprehensive Aptitude/Achievement and Companion Measures, *Chapter VII*—Interest; *Chapter VIII*—Values and Satisfaction, *Chapter IX*—Career Development/Maturity, *Chapter X*—Personality, and *Chapter XI*—Instruments for Disabled and Disadvantaged Populations.

Reviews begin with publisher-provided descriptive information in a standardized format, followed by a brief critical review of the instrument's strengths and limitations by one or two professionals of acknowledged expertise. Users will find in these entries the answers to daily application questions:

> For what ages in this test appropriate? Who publishes it? What is the date of this inventory? Is there a new edition? Can it be given within one of our class periods? Can it be hand-scored? How expensive would it be for me to test an entire grade? What kinds of scores would we get from this instrument?

Beyond these factual answers, users will find here the kind of practical information that they need for evaluating instruments for potential use:

> Are there reasons to believe this instrument may not be appropriate for the use I have in mind? Does this test really measure what we want to measure? What other instruments of this type are there for me to consider? Is there an entire category of measures we have overlooked?

Following these reviews, the *Guide* addresses other types and methods of assessment as well as the multitude of career assessment instruments available for unique or special purposes. Robert Slaney and colleagues provide a comprehensive review and examples of card sort approaches to career exploration in *Chapter XII* and in *Chapter XIII* Patricia McDivitt reviews the development of alternative types of assessment, especially the increasing use of portfolios in career awareness and exploration. A detailed comparison of the assessment components in 15 computer-based career guidance systems is presented in *Chapter XIV* by James Sampson and his colleagues. In the final chapter (*XV*), Jerome Kapes and Tammi Vacha-Haase provide an extensive overview of 245 additional career assessment instruments that are available to the practitioner. Where available, readers are referred to more complete reviews. In total, nearly 300 instruments are reviewed or described throughout this guide.

The *Guide* concludes with the appendices provided to facilitate the use of this, as well as other, career assessment resources:

* David Jepsen and Jerome Kapes' annotated bibliography (*Appendix A*) provides a manageable number of current references in testing and career assessment.

- Publishers' full addresses and phone numbers when available are provided in *Appendix B* to simplify requests for specimen sets or other assistance and to facilitate ordering.
- *Appendix C* provides the complete text of professional association position statements on the responsibilities of test users, code of fair testing practices and standards for multicultural assessment.
- The *User's Matrix* created by Jerome Kapes and Tammi Vacha-Haase in Appendix D should help to guide the reader to instruments appropriate for selected purposes.

Once the reader has an overall picture of what is available here, thoughtful consideration should be given to perspective. Fairness and balance in the treatment of reviewed instruments drove all deliberations by the editors, advisory committee and authors. We have made this reference as dependable, honest and accurate as it was in our power to achieve. Nevertheless, limitations of length, technical documentation, and occasional divided professional opinion suggest that serious readers will need to undertake additional investigation, using the technical manuals and the sources referenced. This guide can neither teach a measurement course nor make a selection decision for a busy practitioner. The user must assume his or her own responsibility to achieve full professional competency through ongoing professional development programs and a great deal of experience with the instruments described here.

With this perspective in mind, however, we are pleased to offer this tool to assist in clarifying and making manageable the complex body of knowledge about career assessment available to today's practicing counselor.

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CHAPTER II

The Counselor's Role in Career Assessment

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BACKGROUND

Whether one considers the historical roots of career counseling or its more contemporary models, the counselor's role and assessment have always been seen as interactive. Career assessment whatever its form—tests, inventories, observational schedules, performance centers—has been a fundamental tool of the counselor engaged in career guidance or career interventions (Spokane, 1991). The most recent statement of competencies in career counseling, adopted by the Board of Directors of the National Career Development Association (NCDA) in January 1991, includes assessment as one of the 10 major competency categories. The current NCDA list of competencies for career counseling includes: individual and group counseling skills, individual and group assessment, program management and implementation, consultation, information and resources, career development theory, special populations, supervision, ethical and legal issues, and research and evaluation.

While all of these competencies are important and deserve discussion, the category of individual and group assessment is central to the purpose of this book. Among the sub-sets of knowledge and skill are 13 emphases which this category of career counseling advocates that counselors be able to implement. For reasons of space limitations, only selected examples of these emphases are listed below:

1. knowledge about instruments and techniques to assess personal characteristics (such as aptitude, achievement, interests, values and other personality traits);

2. leisure interests, learning styles, life roles, self concept, career maturity, vocational identity, career indecision, work environment preference (e.g., work satisfaction), and other life style/development issues;
3. conditions of the work environment (such as tasks, expectations, norms, and qualities of the physical and social settings);
4. knowledge about variables such as ethnicity, gender, culture, learning style, personal development and physical/mental disability which affect the assessment process;
5. knowledge of and ability to effectively and appropriately use computer-assisted assessment measures and techniques;
6. ability to evaluate assessment procedures in terms of their validity, reliability, and relationships to race, gender, age, and ethnicity;
7. ability to interpret data from assessment instruments and present the results to the client and to others designated by the client.

The scope of the knowledge and skills as well as the content of competencies related to individual and group assessment suggest that such a counselor role is a comprehensive one. It is a role that involves maximum sensitivity to the cultural diversity of the test-takers, to the multiple purposes of testing, to the matching of client need for assessment to the appropriate instrument, to the understanding and use of a range of testing technologies, their interpretations, and the ethics of their use.

THE ROOTS OF CAREER ASSESSMENT

From a historical perspective, these competencies in assessment and others that might be cited suggest that from the turn of this century, the time of Frank Parsons, the person frequently called the Father of Vocational Guidance, to the current time, the needs for assessment as well as its forms have grown and broadened. Some 85 years ago as Parsons was preparing his major work, *Choosing a Vocation*, posthumously published in 1909, the architecture of the trait-and-factor approach was outlined. This rudimentary process of vocational guidance or "true reasoning" as Parsons named it, consisted of three steps:

> First, a clear understanding of yourself, aptitudes, abilities, interests, resources, limitations, and other qualities. Second, a knowledge of the requirements and conditions of success, advantages and disadvantages, compensation, opportunities, and prospectives in different lines of work. Third, true reasoning on the relations of these two groups of facts (Parsons, 1909, p. 5).

This brilliantly conceived paradigm has inspired many of the perspectives on assessment, the counselor's role, and the processes comprising vocational guidance for much of our history, certainly at a minimum into the 1950s. The three steps of Parsons' model embrace several seminal notions which in our more sophisticated day still have fundamental importance to us. Essentially the notions are that an individual can be described as possessing certain characteristics (traits, interests, skills, aptitudes, etc.) that can be measured, that different occupations or educational alternatives can be analyzed and described in terms of the amounts and configurations of such traits they require, and that when individual characteristics and the requirements of occupations or educational options are matched and evaluated through a procedure which Parsons called True Reasoning, and we call decision making, an effective choice can occur. Finally, this entire process can be enhanced if the client engages in it with an experienced advisor or counselor.

In Parsons' day, a time of major immigration of persons from abroad and from the rural areas to the cities of this nation in quest of jobs and freedom, the heterogeneity of such populations and the literal explosion of industrial diversity in America fueled the use of assessment as a vital mechanism to identify talents and to distribute them throughout the burgeoning occupational structure. In so doing, Parsons' model added spark to the psychometric momentum that was under way in Europe and just beginning to be transplanted to these shores by Binet and others as they brought intelligence tests and additional rudimentary forms of measurement to adapt to the needs of this dynamic country. World War I intensified the need for assessment devices that could discriminate among the aptitudes of persons capable of implementing the increasingly bureaucratic organization and technological weapons systems of the armed forces of the day.

The early years of assessment in vocational guidance were largely periods in which classifying, identifying and "creaming talent" spurred the search for better and fuller information about individual differences, the importance of such differences, and how they could be measured. In the ensuing decades, research efforts in vocational guidance and, more recently, in career guidance have focused the empirical spotlight on how occupational activity differs and the meaning of such differences for person-job fit, for job satisfaction, employee satisfactoriness and for individual adjustment and success. The resulting insights have modified assessment strategies to include not only assessment of workers, but also measurement of environments and their mutual typologies. And, in our most recent decades, research has turned from individual differences in ability to cope with work tasks or job requirements or performance potential to issues of readiness to choose, to planfulness and to adaptability.

The United States is now entering a period of intense international economic competition. Dramatic changes in the organization and management of work as well as shifts in worker roles from individual autonomy to greater teamwork and cooperation, and rising formal educational requirements related to the degree to which emerging occupations are based upon advanced technologies, information and interdisciplinary knowledge bases will increase the need for assessment and broaden its focus. In addition, national policies now argue the need for national educational goals stated in behavioral terms, and assessment systems to measure them (Bush, 1991). The U.S. Department of Labor Secretary's Commission on Achieving Necessary Skills (1991) has advocated in its report *What Work Requires of Schools: A Scans Report for America 2000* both workplace competencies that effective workers can productively use and the foundation areas (basic academic skills, thinking skills and personal qualities) that schools must provide to support and foster workplace competencies. Each of these trends, and many related themes, have implications for increased applications of career counseling and career guidance, and undoubtedly, career assessment as we enter the 21st Century.

THE CHANGING DEFINITIONS OF VOCATIONAL AND CAREER GUIDANCE

In 1951, Super (1951) recommended that the definition of vocational guidance adopted in 1937 by the National Vocational Guidance Association be revised. The Association concurred. Therefore, the earlier view of vocational guidance as "the process of assisting the individual to choose an occupation, prepare for it, enter upon it, and progress in it" was changed to "the process of helping the person to develop and accept an integrated and adequate picture of himself and of his role in the world of work, to test this concept against reality, and to convert it into a reality, with satisfaction to himself and to society" (Super, 1951). With acknowledgment that the language of the time was male-dominated, the essential thrust of the 1951 redefinition of vocational guidance was to move the focus of research and practice in assessment from a primary emphasis on what is to be chosen (the content of choice, the specific job or occupation at issue) to the chooser (the readiness, the independence, the skills of the person doing the choosing). Within such a context, our initial concerns about assessing the traits and factors making up the content of individual choices—for example, aptitudes, interests, job requirements—however important they continue to be, have been complemented, augmented, or replaced by assessments primarily concerned with the "process of choice": how ready is the individual to choose; how planful, how knowledgeable about the choice process, how able is this person to define the choice problem immediately ahead, to collect pertinent information and weigh its personal value? In pursuing such understanding, psychometricians and researchers have turned their attention to identifying the importance in mediating how one's career behavior unfolds, of undecidedness and indecisiveness, of work salience, of different decision-making styles, of perceptions of self-efficacy, of the acquisition of task approach skills, of the presence of irrational beliefs about work and personal capacity.

As the purposes of career assessments have broadened to provide a growing range of measures useful in assessing both the content and the process of choice, the barriers to them, and the mix of options available to the individual relative to the centrality of work, leisure and life style, it is still possible to use Parsons' three-step paradigm as a framework to understand measurement trends. Parsons' three steps continue to remind us that individual differences, opportunities for action, and choice-making styles represent fundamental elements of career counseling that assessments help to illuminate or clarify. Parsons' paradigm also reminds career counselors that neither career counseling nor career assessment nor clients exist in a political, economic or social vacuum. Rather they mirror and interact with the larger environment. To the degree that societies and organizations are dynamic, research in and practices of career assessment will be faced with many challenges.

THE ASSESSMENT CHALLENGES OF COMPREHENSIVE CAREER GUIDANCE

One of the major trends of the past quarter century is the broadening of definitions of career counseling or career interventions and growing comprehensiveness of the interventions comprising career guidance (Herr & Cramer, 1992;

Brown & Brooks, 1991; Spokane, 1991). As the major providers of career interventions have changed from schools and employment services to include business and industry, private practice, colleges and universities and the armed forces, the term "comprehensive career guidance" has taken on new and different meanings in theory and in practice. Comprehensive sometimes means that career interventions are delivered in a programmed, preplanned or systematic manner. In other contexts, comprehensive has been used as interchangeable with longitudinal: the provision of career guidance in an articulated fashion over an extended period of time—kindergarten to grade twelve in the public schools, the four years of college or university, the months spent in a corrections facility or a rehabilitation program, or the period of one's tenure within a particular firm, business or government agency. At other times, comprehensive has referred to a developmental content designed to equip the recipients of career guidance—children, youth, adults, those with a long history of employability skills starting a new career, those with relatively minimal vocational knowledge and skills who are involuntarily displaced from work, those who are exploring an occupational structure in dynamic flux, those immigrants seeking a place in a new work culture, those about to retire from work or decelerate in relation to it—with the attitudes, knowledge, and skills by which they can anticipate, plan, and act on a variety of career-related tasks. The term comprehensive has also been used to reflect the reality that career guidance can no longer be seen as a one-time event in life; rather, it must be conceived as a life-long process which persons enter and leave at different transition points. And, finally, comprehensive means that it is an inclusive process, not an exclusive one. It has importance to all groups in the society as their career development unfolds and as the political and social contexts shift in which their self-identity, work salience, family roles, needs for learning and re-learning, and occupational mobility are played out.

THE CLASSIFICATION OF CAREER ASSESSMENT

As the impact of the growing comprehensiveness of career guidance has unfolded, the repertoire of interventions represented has broadened and become more discriminating as applied to a larger number of populations and settings. So it is with assessment. The uses of tests and inventories in support of the broadening expectations of career counselors has broadened in turn. These uses of career assessment can be classified in many ways and various observers have their own schemes or categorical systems to do so. Earlier in this chapter, assessment has been differentiated in terms of its uses in providing insight into individual status with regard to factors important to the content of choice or to the process of choice. In differentiating assessment purposes in this way, we have learned more and more about what individual characteristics are "fixed effects" and which are modifiable, under what conditions and with what interventions. For some purposes, we have learned to "teach the test" in individual and group activities designed to educate people about the components of choice, rather than assuming that unwise or uninformed choice-making was somehow related to one's gene pool instead of education or experience.

Classification of career assessment has taken other forms as well. One of these structures assigns four major uses to tests or other assessment procedures (Herr & Cramer, 1992). These include prediction, discrimination, monitoring and evaluation. Respectively, the purposes of each of these uses of assessment emphasize, first, using assessment to forecast the odds, the probabilities of individual success in educational, occupational, or other types of career options. In such circumstances, counselors use assessments to help persons consider how competitive they might be in terms of vertical mobility, how high they can reach, what kind of performance they are capable of achieving, in what areas they may experience ceilings on their performance in specific aptitudes which can be circumvented or strengthened.

The second use of assessment, discrimination, is concerned not with performance per se, but rather with the resemblance or similarity between a given individual's values, interests and preferences and those which characterize persons in the occupational or educational environments being considered. In such instances, the question for assessment is *not* how competitive in learning or performing specific work tasks this person can be, but how compatible with the dominant modes of interpersonal behaviors, values and expectations—the affective dimensions of different work cultures—this person is likely to be. Put somewhat differently, the discrimination function in assessment helps persons identify the occupational and educational groups they most resemble and the types of supervision and time structures they work within most effectively. Such assessment insights help persons understand that an effective work choice is not only a function of how well one performs the work content, but, as well, how positively one adapts to or feels congruent with the work environment. Together the uses of tests for prediction and for discrimination encompass much of the information pertinent to the "content of choices."

A third use of assessment is monitoring individual readiness to choose, the status of one's decision-making orientation, the level of career maturity, the availability and quality of the attitudinal and cognitive variables comprising an individual's ability to choose. These insights represent the diagnostic ingredients which undergird decisions about educating individuals to choose, "teaching them the test," providing them decision-making models, helping them cope with independence-dependence, indecisiveness and indecision, and other elements which relate to the "process of choice."

A fourth use of assessment is in the evaluation of career interventions. Evaluation, however simple or sophisticated it may be, is essentially a series of activities or processes designed to determine how well the goals of career guidance have been achieved. Evaluation may be employed to compare the efficacy of different interventions, or the summative results of a developmental career guidance program, or the pre-post-intervention changes in attitude, knowledge or skill of individuals who have been engaged in career counseling. Assessment devices provide the mechanisms to examine relationships between career intervention processes or programs and the behavioral outcomes achieved by individuals or groups. Assessment provides feedback about individual achievement, given different counselee characteristics, situational conditions, or intervention strategies. In a sense, assessment devices are both objects of research and evaluation and the vehicles by which to carry out such activity. Their use in gathering information about groups of persons has advanced our knowledge of career behavior and the types of interactions most likely to be effective in facilitating such behavior. In individual terms, the use of assessment devices has converted vague abstractions about opportunities for action into probabilities (odds) of access or success that persons can consider within their own value systems and risk-taking styles.

While other terms can be used to identify the purposes of assessment just cited, it is likely that the underlying purposes of prediction, discrimination, monitoring and evaluation will continue to shape counselor's roles in assessment for the foreseeable future. What will change are the applications of these purposes or the social metaphors that assessment will serve. In addition, there will continue to be new theoretical and research insights into the importance and the use of career assessment.

CAREER ASSESSMENT AND DECISION MAKING

One major stream of thought which has implications for assessment is that which rests in theoretical perspectives on decision making. Current perspectives hold that decision making is fueled by information. Choice making is not impulsive; it is a sequential narrowing and specifying of choice options as one translates various psychological and occupational information, whether accurate or not, into a self-concept system and a set of images of how certain educational and occupational alternatives will permit one to implement the self concept (Super, 1980). In preparing for and executing decision making, Gelatt (1962), for example, talked about the need for a predictive system (aptitude information, information about alternatives available), a valuing system (interests, values, information about the importance of different alternatives to oneself) and a decision system (ways of converting the information obtained in a predictive and valuing system into a plan of action) as being essential ingredients for choice.

Recently, Gelatt (1989) amended his 1962 model to accent not only the rational and the linear in decision making, but also the legitimate use of nonobjectivity or subjectivity in considering one's choices in the constant presence of uncertainty. Gelatt contends that reflections, flexibility, and both rational and intuitive thinking must occur in a holistic way. In this view, "rational strategy is not obsolete, it is just no longer sufficient" (p. 255) . . . "helping someone decide how to decide must move from promoting only rational, linear, systematic strategies to recommending, even teaching, intuitive situations and sometimes inconsistent methods for solving personal problems or making decisions" (p. 253).

A second paradigm of relevance is that which has come to be labeled self-efficacy theory. Antecedents to such theoretical perspectives were earlier labeled as expectancy × value theories of motivation. In overly simplified terms, according to expectancy × value approaches, personal choice behavior or motivation depends upon the expectancy that the act will be followed by a given consequence (or outcome) and on the value or attractiveness of that consequence (or outcome) to the person contemplating a particular action. From such a view there are two types of expectancies about which people are concerned. The first (E → P) has to do with the person's estimate of the probability that he or she can accomplish the intended performance (such as perform the required tasks, meet rigid deadlines, etc.) in the particular situation. The second expectancy (P → O) has to do with subjective probability estimates that if a particular performance is achieved it will lead to certain outcomes (a pay raise, promotion, some other reward). Self-efficacy theory (Bandura, 1977) extends this line of thinking by emphasizing that behavior changes and decisions made are mediated by expectations of self-efficacy, expectations or beliefs that one can perform a given behavior.

Inherent in self-efficacy theory or expectancy-value theory is the assumption that people choose or perform depending upon how they understand a situation or how they view themselves. If they see themselves as losers, however that is defined for them, they will choose those things which are less challenging with immediate gratifications and little requirement for commitment. On the other hand, if they see themselves as winners they will choose in accordance with the confidence and expectancies associated with such a view. To put it in the terms of the great philosopher Alfred North Whitehead, people create their own realities by what they choose and by what they avoid choosing.

To be somewhat redundant, understanding of self and of opportunities is based upon experience and information. Neither of these forms of input is necessarily accurate; therefore, people make wrong estimates of their chances of success, avoid opportunities in which they could succeed, or settle for less than they could achieve because the information which feeds their decision making or self-efficacy is faulty. Some faulty input occurs because developmental experiences in the home and community provide inconsistent, inaccurate or limited information. The school or the workplace striving to create conditions for personal excellence can neutralize such faulty information by providing personal information which is objective, which is comprehensive, and which is competently interpreted to the end that persons are encouraged to pursue personal excellence in whatever areas of strength or talent they have. The school or workplace seeking personal excellence will also provide assessments which reinforce challenges, not cause them to be avoided.

THE COUNSELOR'S ROLE IN ASSESSMENT

While much more might be said about career assessment, its various purposes, and its role in facilitating personal excellence it may be useful to complete this chapter by returning to the counselor's role in career assessment.

The counselor's role in career assessment is complex. In the first instance, it requires the counselor to learn continually about the emerging use of career assessment and the instruments available for different populations and different purposes. As career interventions have become more comprehensive in the consumer groups served and the settings in which they are employed, there has been a major expansion in the number and complexity of the types of tests and measurements available. Older instruments are constantly being revised and their technical properties and administration procedures altered. Such growth challenges the counselor and the researcher to stay abreast of such developments and to effectively incorporate their meaning into practice.

Counselors using career assessments are also being challenged to be technologists. The number of aptitude, interest, decision making and other forms of career appraisals which are programmed for microcomputer use and reporting is rapidly growing. As this occurs, changes arise in the counselor's relationships with clients, the types of information used, as well as the ethical responsibilities involved. The National Career Development Association (NCDA), American Counseling Association (ACA), National Board for Certified Counselors (NBCC), and other professional groups are increasing their attention to defining the competencies needed by counselors in using computer-assisted career guidance systems. As they do, they are redefining their ethical codes and incorporating into them the direct and the subtle implications for counselor practice which result. More could be said about these matters. Suffice it to say, however, that while computer systems and other advanced technology applied to career assessment may extend counselor capabilities to score and report individual data and facilitate client decision making they also add to the counselor's need for knowledge and skill in using such technology.

In engaging in career assessment, counselors must remember that many critics object to the influence which any form of testing exerts in this society. In part, this criticism evolves from observations that some counselors and other test users attribute an inappropriate amount of confidence to the results of testing as "objective" markers from which decisions can be made. Further, by the content included and the criteria of success established, tests tend to shape goals, define what is relevant to decisions, and, indeed, affect the structure of social institutions dependent upon test results. Counselors engaged in career assessment must be able to address such criticisms in general and as they affect particular sub-populations. Much recent controversy has been focused on whether it is appropriate to use standardized tests and test content conceived by and validated on predominantly middle-class white populations with African-American or other minority groups whose developmental and educational experiences, economic conditions, and language systems have been different from those groups on whom the assessment was originally developed. This concern is present not only with regard to standardized tests, but pervades all forms of assessment. Each counselor must come to grips with an informed ethical response to these matters. Part of this response necessarily incorporates attention to what populations make up the norm groups and the nature of the research which describes the use of assessment with different sub-populations.

Each counselor engaged in career assessment must, at minimum, be concerned about two sets of characteristics: the technical or scientific aspects of a particular instrument and the social functions of the assessment (Herr, 1989). Test bias can lie on either side of this equation through over-interpretation, sexism, content, differential validity, the selection model, the wrong criterion, or the testing atmosphere (Flaugher, 1978) among other matters. Cronbach (1980) has reminded us that it is important to differentiate between the technical aspects of test bias and the questions of the proposed use of tests which are really ethical or policy questions of bias. The latter raises questions, not about predictive validity, but whether tests should be used to select or facilitate access to opportunity, for whom, and under what conditions.

For the counselor engaged in career assessment, the role is a critical one in a historical period where knowledge is power in an Information Society. The counselor plays a role as a switching mechanism between personal characteristics and opportunities. Career assessment becomes a linking strategy to help individuals conceptualize themselves and their options with accuracy and with insight. However, any career assessment device has social validities beyond those technically defined: It can be used to enable the counselor to maximize opportunity or to be a gate-keeper, to exclude or to include persons, to constrain or to liberate. Each counselor must deliberate seriously about what career assessment means to him or to her with regard to such possibilities.

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NOTE: This chapter is a revised version of a previous chapter which appeared in the second edition of this book. Portions of this chapter were abridged from the author's original address "Using Assessment in Career Development," at the AACD Professional Development Institute, New Orleans, April 20, 1987.

CHAPTER III

Selecting a Career Assessment Instrument

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PURPOSE

Many readers of this book are likely involved in making a decision regarding what instrument to select for their clients (or students). The purpose of this chapter is to remind you of several important factors in instrument selection and to assist you in systematizing your task. It is assumed that you are a qualified counselor who has had the necessary professional training in counseling, including the required (and much loved) course(s) in assessment.

As Herr points out in the previous chapter, decision making is fueled by information. In making a decision about whether to use any assessment instrument and, if so, which specific instrument, you need to be fueled by information. That information includes knowing the specific purpose of the assessment, recognizing who should be involved in instrument selection, obtaining information about the practical and technical qualities of various instruments, and making a final selection.

In its broadest sense, the purpose of any assessment is to gather data to facilitate decision making. But there are many kinds of decisions, and many kinds of information that may facilitate such decisions. The decision to be made may relate to further education and/or career plans. The purpose may be to encourage the client to engage in further career exploration, to obtain information regarding scholastic ability, or to obtain information about the client's interests. Prior to selecting an instrument, it is necessary to determine specifically what information is desired and why and how that information would be useful.

In selecting an instrument, one must compare the intended purpose with the stated purpose of the instrument. The descriptions of the instruments in this book include statements of purpose. For other instruments you may be reviewing, the test manual should include such a statement. The *Standards for Edu-*

cational and Psychological Testing (AERA, APA, NCME, 1985) has several standards specifically related to the purpose of the test. Two of these standards are as follows:

> Standard 6.1: Test users should evaluate the available written documentation on the validity and reliability of tests *for the specific use intended* (emphasis added). (p. 41)
> Standard 6.3: When a test is to be used for a purpose for which it has not been previously validated, or for which there is no supported claim for validity, the user is responsible for providing evidence of validity. (p. 42)

WHO SHOULD BE INVOLVED IN INSTRUMENT SELECTION

The proposed assessment may be intended for a specific client or for a large group of individuals (e.g., all tenth graders). If the assessment is to assist a specific individual, it is useful to involve the client in the process. Generally the client would not select the *specific* test, but he/she might be involved in discussions about what types of instruments can provide the most useful information for whatever decisions are to be made. Clients' involvement should increase their motivation while completing the instrument and also make them more likely to accept the results and their interpretations (Hood & Johnson, 1991).

If the instrument to be selected is to be administered to a large group of individuals (for example, if it is to be a component of a school testing program), the selection procedure should be a cooperative venture. Teachers, administrators, counselors, and, to some extent, parents and students, can all contribute to determining purposes of assessment and assist in the *early* stages of instrument selection. This should lead to a more complete set of purposes and more enthusiastic test use than if the program is determined by a single individual. Typically the final specific instrument selections should be the responsibility of the professional staff.

SOURCES OF INFORMATION ABOUT SPECIFIC INSTRUMENTS

After the purpose of assessment and the individuals who will be involved in the selection process have been determined, how can you ascertain which instruments will provide the needed information? Basically this is accomplished by gathering data from many different sources. This book is one good source of information. As mentioned, the instruments' purposes are described as well as much other practical information. While this book provides well-written reviews by prominent individuals, those reviewers would all agree that prior to a final selection, one would want to gather additional data about the instrument. The introductory chapter of this book as well as *Appendix A* provide appropriate information about various sources.

After one has determined the purpose of assessment and identified several instruments that seem to match that purpose, it is wise to obtain specimen sets (and the technical manual if not a part of the specimen set) of the instruments, read all information with care, and actually take the instrument.

TECHNICAL INFORMATION REGARDING INSTRUMENTS

The major technical characteristics to be concerned with are the reliability and validity of the instrument, the adequacy of the norms, the types of scores provided, and the instrument's appropriateness for various groups (e.g., various ethnic groups).

Reliability

Technically speaking, reliability is a characteristic of the scores, not the instruments. The scores are reliable if they are consistent, that is, if they do not fluctuate due to random errors. Reliability indices of the scores may be estimated through an internal consistency analysis (e.g., K-R 20), through equivalent forms analysis, or through a measure of stability across time. Sometimes a coefficient of stability and equivalence is computed (correlating two different forms across a time period). Also, when test scores are obtained using some degree of subjective judgement on the past of the scorer, inter-rater reliability may be important. Which estimate is of interest to you depends upon the purpose of the assessment. Typically, if one uses a total score (or sub-score) in interpretation, then one wishes to know if the score represents a homogeneous characteristic and so internal consistency reliability information is useful. (However, internal consistency estimates are inappropriate for speeded tests.) If the purpose of the assessment is to encourage career exploration and enhance current self-understanding, evidence regarding the long term stability (or instability) of the scores may be unimportant. If one is using an interest inventory to assist in making a decision about a career, one should be interested in evidence regarding the stability of the scores. If one is interested in assessing change across some period of time and wishes to use two different forms of the instrument, then one would need information regarding the equivalence of the forms.

At times, one is not interested in the reliability of the scores, but rather the reliability of a decision made from the scores. For example, some instruments are used to make "pass/fail" decisions and a criterion-referenced score is reported. For those decisions where one is interested in a dichotomous classification of individuals, the reliability of the set of scores is not nearly as important as the reliability of the classification. In those cases, the publisher should provide some evidence of the decision reliability.

While the technical manual for an instrument should report reliability data, such data are not particularly useful to the client. The standard error of measurement should also be reported; this is the statistic that is best used to communicate to the client something about the consistency of the score. Typically, one reports a band of scores one standard error of measurement above and below the obtained score. If the manual does not report the standard error of measurement, it can be determined as long as the reliability estimate and the standard deviation of the scores are reported.

Readers may wonder how high a reliability index should be before adopting a test. There is no simple answer to such a question. It depends upon the purpose of the assessment and the availability of other data to assist in making a decision. For example, one needs more reliable data to make a decision about a single individual than to make an inference about a group characteristic. One should have more reliable data if the decision to be made is very important and/or irreversible than if the decision is of minor importance and is easily reversible. Thus, although no single guideline can be satisfactory, you should expect to find reliability estimates above 0.80 for almost all well developed instruments and often the estimates are in the low 0.90s.

Validity

> Validity . . . refers to the appropriateness, meaningfulness, and usefulness of the specific inferences made from test scores. Test validation is the process of accumulating evidence to support such inferences. (AERA, APA, NCME, 1985, p. 9)

The above quote and the two *Standards* quoted earlier make the point that there must be validity evidence for the specific use intended, or the user must be responsible for gathering such evidence. Thus, in judging validity, one must have in mind just what specific inferences are intended to be drawn from the scores and must look for (or gather) evidence that such inferences are appropriate, meaningful and useful.

It is useful to think of two general types of inferences: (1) making inferences about performance other than that measured, and (2) making inferences about a characteristic (construct) of the person measured. The first is a statistical inference and what is commonly referred to as criterion-related validity evidence is needed. The second is a measurement inference, and requires content and/or construct validity evidence.

Information regarding validity may be obtained from any of the common sources of information (e.g., critical reviews in the *Mental Measurements Yearbooks* or the technical manual of the instrument). What about anecdotal (clinical) evidence from fellow counselors? Such "evidence" should not be discounted. Clinicians often have accurate perceptions regarding the usefulness of an instrument. However, such evidence should not be considered sufficient. Further, there is a concept called "face validity" which simply means that "on the face of it" the instrument appears to measure what it claims to measure. Face validity is not validity in a technical sense and should not be taken as evidence of the appropriateness, meaningfulness, and usefulness of the specific inferences made from test scores.

Norms

One can add meaning to a test score through norm referencing and/or through criterion referencing. For most of the inferences one is interested in making (e.g., level of academic aptitude or level of interest in a particular career) it is important to add meaning to a score by comparing it to the scores of others—or norm referencing. If one does norm referencing, it is important that the norm group be clearly defined and that it be both representative and relevant. It is usually an advantage if the norms are recent.

A norm group is typically a *sample* of individuals from a larger *population*. If one is making an inference regarding how an individual compares to the population it is important that the sample be *representative* of that population. One consideration is the size of the sample. It should be large enough so that it provides reasonably stable values. A value is stable in a sampling sense if another sample would have produced a similar value. However, a large sample alone is not sufficient. If the sample is non-representative, making it larger will only increase the stability of the non-representative value. The sampling procedure must be correct. Most readers are not sampling statisticians, and cannot be expected to delve into the sampling process extensively. In general, however, you should look to see whether the publisher considered relevant variables in the sampling procedure (such as age, gender, socioeconomic status, ethnicity, size of community, and geographic location). The publisher should explain in at least a general fashion how the relevant variables were considered in the sampling design and how the sample proportions compare with the population values.

In addition to providing information regarding the sampling design, the publisher should report the cooperation rate of the sample chosen. If the proportion of the original sample from which scores are obtained is too low, then the obtained scores may be from a biased sample.

The *relevance* of the norm group depends upon the degree to which the population sampled is comparable to the group with which users of the instrument wish to compare their clients. For example, suppose an individual client (who is a high school senior) is interested in making a decision about which college to attend and wishes to consider his/her academic ability (e.g., the SAT score) in making the choice. Knowing how his/her ability compared with a representative sample of high school seniors or even the set of all high school seniors in the nation who took the particular test would be useful. However, it would be even more useful to know how the SAT score compared to individuals attending the colleges under consideration. Hood and Johnson (1991) report, for example, that an SAT-V score of 525 would place one at the 3rd percentile at a particular Ivy League University and at the 99th percentile at a particular Southern State College.

An area where there remains some controversy in interest assessment is whether there should be separate gender norms or combined gender norms. The answer as to which norm group is more relevant may depend upon the particular inference to be made from the score. *Standard* 9.3 states that:

> Counselors should review technical data and develop a rationale for the decision to use combined or separate norms for females and males in reports to test takers. (p. 56)

Because one may reasonably desire different norm groups for different decisions (inferences) publishers frequently furnish a variety of norms. The important point in instrument selection is that the relevant norms for your particular purposes are available.

Types of Scores and Interpretative Materials

Publishers frequently provide a variety of score types (e.g., percentiles, T scores, stanines). However, in communicating norm-referenced scores to clients it is typically preferable to use a type of score that is easily understood by them. The percentile (or percentile rank) is typically the score easiest to understand by clients.

In most situations, counselors are using assessment instruments to assist clients in making decisions about their own lives. Because the decision is the client's, it is important that he/she not only understand the score, but also its technical quality, and the implications of that score for the decision to be made. As mentioned earlier, one way to communicate the reliability of a test score is to use a band interpretation (typically the band is one standard error of measurement above and below the score).

Clients may understand the particular score and the meaning of the band interpretation and still not have a good understanding of how the information is useful to them. Other things being equal, one should choose an instrument that has available good interpretative materials that can be shared with clients. However, the ultimate responsibility for interpreting a score always lies with the counselor. It can *not* be delegated to some computerized interpretation or publisher's handout.

If the publisher provides a cut-off score for a criterion-referenced interpretation it is important that "the method and rationale for setting that cut score, including any technical analyses, should be presented in a manual or report" (AERA, APA, NCME, 1985, p. 43).

Appropriateness for Various Groups

At times you may be interested in obtaining information from an instrument about a particular client (or group of clients) who is a member of a particular group (e.g., non-English speaking, physically impaired, ethnic minority). You need to be alert to the appropriateness of an instrument for that group. An instrument may be inappropriate because the items are offensive, they are biased, or because the total scores are not valid for making the particular inference of interest for that particular group.

Major publishers are quite alert to the importance of these issues and generally take steps to maximize the value of the instrument for a variety of groups. For example, publishers typically have sensitivity reviews of the items, they do statistical analyses to detect items that function differently for different groups, and they obtain separate validity evidence for various groups. Nevertheless, it is safe to say that no publisher can possibly gather evidence on the appropriateness of the instrument for *all* possible groups, and some publishers do not gather sufficient data for any groups. It is incumbent upon those selecting instruments to determine whether data exist relating to the appropriateness of the instrument for the particular group which represents their clients.

PRACTICAL ISSUES IN INSTRUMENT SELECTION

The most important practical issue in instrument selection is to select only an instrument which you are qualified to administer and/or interpret. For example, counselors are generally not trained to give individual intelligence tests and hence such an instrument should not be selected. Counselors are generally not trained as clinicians and should not choose instruments that require such a background.

Other practical issues include the time it takes to administer and score an instrument, the costs involved, the availability of alternate forms (primarily of importance for achievement tests), and the availability of a publisher's representative to assist should questions arise concerning any aspect of the administration or interpretation of the instrument. These practical issues are typically considerably less important than the technical issues discussed earlier, though practitioners will attest that they can make or break your testing program.

TEST EVALUATION OUTLINE

To accomplish the task of evaluating tests for selection purposes, it may be useful to follow an outline. The one presented below has been adapted from Mehrens, Lehmann, Eberly, and Denny (1991).

1. State your purpose for testing
2. Describe the group that will be tested (e.g., age or grade)
3. Name of test
4. Author(s)
5. Publisher
6. Copyright date(s)
7. Purpose and recommended use as stated in the manual
8. Grade/age levels for which the instrument was constructed
9. Forms: Are equivalent forms available? What evidence is presented on the equivalence of the forms?
10. Format: comment on legibility, attractiveness, and convenience
11. Cost
12. Content of test and types of items used
13. Administration and timing requirements
14. Scoring processes available (e.g., machine scoring)
15. Types of derived scores available
16. Types and quality of norms
17. Adequacy of reliability evidence presented in the manual
18. Validity evidence
19. General quality of administrative, interpretative and technical manuals
20. Comments about the instrument by outside reviewers

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CHAPTER IV

Using Assessment Instruments in Career Counseling: Career Assessment as Compass, Credential, Process and Empowerment

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INTRODUCTION

Let's first clear the air. No practicing counselor or counselor educator—not even the three of us who have chosen to edit and be identified with this work—believes that with the results of career assessment instruments we achieve the pinnacle of perfect career guidance. It matters not that our clients and students want us to provide tests which will "tell me what to do with my life"; it matters not that our program supervisors ask us to justify expenditures for these measures in terms of their assuring success in improving the career choices of our clients; it matters not that we ourselves would rest just a little more easily if we dared believe these were powerful tools with impeccable precision; it matters not, even, that we sometimes have conversations with ourselves in which we become convinced that we are the problem, that if we only knew just a little more about these instruments we could use them without caution or reservation. No, our doubts are correct: These are not perfect instruments, and even perfect use of them in career counseling would not guarantee the result our clients and supervisors seek.

So what, then, is the point? Why learn about all these instruments? Why use them in career guidance? Why even read this book? Because in learning about these instruments, including their theoretical underpinnings, their strengths and limitations, and their appropriate uses with various clients and various career development needs, *we achieve a far better standard of practice* than we deliver when we attempt to conduct our career guidance/counseling/development programs without them.

Defining that "better standard" will be the focus of this chapter. We will get there by examining in turn four quite different ways of using our career assessment instruments, as Compass, Credential, Process and Empowerment.

CAREER ASSESSMENT AS COMPASS

We turn first to our historical roots and the compass-like model of guidance with which it all began. In 1866, Thomas Carlyle observed in his Edinburgh Inaugural Address: "It is the first of all problems for a man to find out what kind of work he is to do in this universe." Corrected for gender bias, the words would remain a statement of a primary goal of far too many of today's career education and career guidance programs. In focusing on "finding the answer" to the universal problem, these programs imply that, somewhere—if one can only find it—there is a single best answer, the perfect career for which one is destined.

Consider next the fundamentally important work of Frank Parsons (1909) in setting the agenda for the counseling profession. Parsons' tripartite model of vocational guidance set forth as our profession's work assisting each young person with three developmental tasks: (1) knowledge of self, (2) knowledge of the world of work, and (3) "true reasoning" or decision-making skill incorporating these increased understandings into the appropriate vocational decision.

Indeed, the pioneering work of the vocational development theorists who would follow (e.g., Super, Roe, Holland, Tiedeman) would devise "trait-and-factor" models for career guidance based on the same assumption, that skilled guidance professionals would be able to improve the accuracy of the hit. Thus, when the National Defense Education Act of 1958 prescribed and funded career guidance for our nation's schools, it did so precisely because of the belief that helping our best and brightest kids find their right spots (presumably in math/science/technology careers) would strengthen our nation's competitiveness. Nearly 30 years later, the 1984 Carl D. Perkins Vocational Education Act extended to handicapped and disadvantaged students the same concern over the quality of their career planning by prescribing the use of interest and aptitude measures to assure that they were being placed in appropriate vocational educational programs. That the individuals with whom we work might have had more than one "right" career, and later, more than one "right" career path, emerged slowly as enhancements to the model. Job *families* and *clusters* of possible careers began to replace single job titles in our career education materials. We began to talk about *career paths*, about students being prepared to change occupations three, five, now up to nine times in their lifetimes. The National Assessment of Educational Progress (NAEP) objectives for Career and Occupational Development combined the clear restatement of Parsons' model (in A–C) with the latter refinement (in D):

I. Prepare for making career decisions.
  A. Know own characteristics relevant to career decisions.
  B. Know the characteristics and requirements of different careers and occupations.
  C. Relate own personal characteristics to occupational requirements.
  D. Plan for career development or change. (NAEP, 1971, p. 15)

To this day, the consistent beliefs of some of our clients still remain that somehow we will find for them the "right" careers if they take enough tests to extend sufficiently (i.e., to the limits of what is measurable) our knowledge of them. Viewed this way, the career assessment process is one of amassing information about the individual's interests, aptitudes, achievements, attitudes, values, personality types, unique talents, learning styles, interpersonal skills, special needs, manual skills, study skills, and any other factors we can measure which might conceivably improve the accuracy of the decision. In the "Career Assessment as Compass" model, then, there remains an assumption of *correctness* in the choice of a career or career path, and a further, sometimes subtler, assumption of professional expertise needed to mine the data for the answer sought.

In truth, some elements of this "compass" view are totally incompatible with good counseling practice while other elements remain valid. Although professional counselors reject the idea of a single perfect career choice for clients, our vision of improving people's decision making with data most certainly does include the idea that informed choices are *better* choices. Further, while we reject the idea of our own infallibility as expert deciders given our superior knowledge of the tests, our vision is clearly that we can be of help in assisting the individual to understand and use the results.

To the degree, then, that we are assisting our clients to use these assessments as life-work compasses at all, we must adopt the most severe professional vigilance regarding the quality of the assessment tools and of our interpretation of the data they generate. Standards of ethical practice are pushed to their limits when we assume access to such wisdom. Validity and reliability of the instruments used take on increased significance. Representativeness of any norms must be defended. Bias becomes a vital issue when instruments are used to inform our clients' choices. In his chapter in this book, Ed Herr cautions counselors that bias in testing arises from both the technical qualities of the test and the social functions of the assessment (Herr, 1994).

Concerning the first, if it is known, for example, that 67% of high school girls receive *S* (Social) as their highest interest score on the Self-Directed Search (SDS) (Gottfredson, Holland, & Gottfredson, 1975), and that this likely happens because the SDS reports raw scores, then we must ourselves become the conversion tables, saying to our female students something like, "Well, one of the things we know about this inventory is that most girls receive very high scores on Social interests; let's talk about that interest in Investigative fields, your second highest score and one that it is much less common for young females. . . ."

Clearly, counselors have an obligation to know the limitations in their assessment tools. In this case, counselors must know from reviews and technical reports that there can be a gender-bias problem in the SDS; in other cases they must know that reliability is suspect in instrument X used with younger students or that instrument Y is more valid when used with strong readers. Both test selections and interpretations of results must be based on a thorough knowledge of the instruments available.

Herr's second type of bias (in the social functions of the assessment) is of even more concern to counselors using career assessment as a compass. He reminds us in this regard that:

> The counselor plays a role as a switching mechanism between personal characteristics and opportunities. . . . Any career assessment device . . . can be used to enable the counselor to maximize opportunities or to be a gate-keeper, to exclude or to include persons, to constrain or to liberate. (Herr, 1994, p. 21)

The power of the role in which we cast ourselves when we see the results of our assessments as compasses pointing individuals to better career decisions for themselves is seductive. Nevertheless, to the degree that we do this, the enormity of the moral and ethical responsibility we take upon ourselves, particularly given the imperfect nature of our instruments and our own human biases, must be carefully considered.

Counselors simply do not have the right to say to another human being, "You cannot consider . . . ," "That would be an inappropriate choice for you . . . ," "You will never succeed as . . . ." The only such statement that can be justified would be something like, "We know that most people who are successful in this field have a Mechanical Reasoning score which is considerably higher than yours is right now, and you have indicated that you think this score is about right for you on the basis of other experience. Can you suggest some activities and/or training you might be willing to undertake to develop your mechanical reasoning if you decide to remain with this choice?"

What, then, are our choices regarding how to see career assessment results if not as compasses, or at least not as compasses alone? For the most part, the final two models to be addressed here—career assessment as process and as empowerment—may supply the answer. However, a somewhat troubling additional type of career assessment which is of recent origin will be examined first.

CAREER ASSESSMENT AS CREDENTIAL

It is perhaps useful to note here that career assessment as credentialing is an aspect of our total career assessment programs that is both new and not of our choosing. Few counselors, if asked, would have recommended the creation of the myriad credentialing programs which now exist and which appear to be increasing. Nevertheless, once a credentialing program is in place, counselors who do not see it as a part of their career assessment programs are doing a serious disservice to their students and clients. Any time a test has the power to limit access and opportunity, then counselors must be sure that clients know of the new requirement, monitor the clients' status with respect to the requirement, and confirm that they are prepared to meet it and have a "Plan B" should they not.

This credentialing fervor was not unannounced and unexpected. Warning bells had sounded. *Competency* has become a watchword in American society in recent years, beginning with the *Nation at Risk* report (National Commission on Excellence in Education, 1983) challenging each of us to be concerned about the competency of the graduates of our educational system. One after another there followed additional reports hammering home the same message, highlighted by ***America's Choice*: *High Skills or Low Wages*** (National Center on Education and the Economy, 1990) and most recently the SCANS report (U. S. Department of Labor, 1991) specifying the competencies needed by our citizens to succeed in tomorrow's workforce. At the same time, proposals for high-stakes testing programs at the state and national level were introduced, and in some cases enacted. The Ohio Proficiency Examination program, the Michigan High School Proficiency Testing program and others were created to certify to citizens that graduates of our schools were proficient in the new basic skills and were employable. Indeed, by April of 1991, 47 of the 50 states had some kind of statewide testing program, and of these nearly half (23) were used in some kind of "gatekeeping" manner (Educational Testing Service, 1991). The General Educational Development (GED) tests were approved for use in similarly certifying high-school level attainment in other locales. In an astonishing development, public schools began to be accredited for the first time not by their "input" program elements such as library books, teachers with Master's degrees, and counselor ratios, but by the quality of the output, the attainment of predetermined educational outcomes by all students. The federal "Ability To Benefit" regulation required that trade schools, proprietary schools, community colleges and other post secondary training programs assure their students' ability to attain employability in their programs by offering Pell grants and other funding to no one without either a high school diploma, a GED, or other test evidence of their skill levels. The JTPA and similar employment programs found that the new standard by which they were to be judged was the maintenance of successful employment outcomes for their clients. *Credentialing of competency* is the focus of each of these initiatives, and it is likely that more will follow.

Nearly a decade ago, seeing this on the horizon, I began to include a "Forewarned is Forearmed" section in my workshops for counselors in schools and agencies. Across the country a new concern about the quality of the output of publicly funded programs was developing, along with new requirements that clients be credentialed to prove that quality.

Now our students and clients have new hurdles to pass in order to be eligible even to start down their intended career paths. What is the point of interest and aptitude assessments if the career path selected is not open because someone cannot get out of high school with an endorsed diploma or cannot get into a chosen training program because he or she cannot pass a competency test? In other words, if career decisions are just "pipe-dreams" unless our clients can be made eligible to pursue them by credentialing, then career assessment programs not only should, but must, encompass these competency tests. To ignore them because we do not believe in them is denying the reality of their presence and is shortchanging the counselees who look to us for assistance with their career planning.

The point here is that career counselors must know the new state and national testing requirements that their counselees will need to meet, must, with every colleague in their agency or program, share accountability for the results, and must work with counselees in preparation. Not to do so cannot be defended. According to Edward D. Roeber (1986), now Director of Student Assessment Programs for the Council of Chief State School Officers and formerly Supervisor of the Michigan Educational Assessment Program, "If our students do not pass a competency test, is it *they* who have failed, or *we*?" Counseling professionals would do well to examine their programs and be prepared to answer.

CAREER ASSESSMENT AS PROCESS

This discussion returns now to the more traditional uses of the term "Career Assessment" and to the train of thought that was being developed at the close of the Compass section.

If the "prescriptive expert" role implied in using career assessment instruments as compasses is becoming increasingly uncomfortable, what model is a better fit? For most counselors, with most clients, in most settings, and most of the time, it is in using career assessment instruments as Process and Empowerment that we offer the most appropriate career development/ guidance/ counseling program. Here is the "*far better standard of professional practice*" we have set out to identify.

Consider first the basic philosophical underpinnings of career development to which counselors ascribe. A statement of these which draws heavily on the work of the leaders in the field over the years, is the following *Basic Principles of Career Development* (Mastie, 1983):

1. *Career development is an ongoing process, a series of choices.* Choice points occur throughout an individual's lifespan as both the individual and the environment change. The individual will be changed as surely by education, experiences, opportunities, personal contacts and allegiances as the work environment will be changed by technological, sociological and economic progress. Keeping in touch with these changes, both individual and environmental, and keeping them in sync is crucial.
2. *Decision making and planning are processes which can be learned and applied throughout the lifespan.* Identifying a problem, gathering information, generating alternatives, weighing options and designing action plans are all steps which must begin to be taught in the early elementary grades and must be reinforced throughout the years of schooling and into adulthood. In this way, individuals can be encouraged and trained to take responsibility for directing their own lives, thus preparing them to cope with developmental changes and choices ahead.
3. *Multiple self factors are involved in career choices.* These include interests, aptitudes, achievement, skills, needs, values and self-concept. The latter subjective factors have high influence. Decision making is improved as the individual's understanding of these factors is heightened. Both formal and informal assessment techniques may be used to facilitate this understanding.
4. *Past experiences influence present needs and values.* While past experiences are not irreversible, it is important to start where the individual is. Recognizing, understanding and accepting these experiences and their effects allows for their incorporation into the process and for movement beyond them.
5. *The social context influences present thinking.* Expectations by peers, teachers, parents, spouses, significant adults and society at large can be

identified for their impact on the individual's own thinking. This is particularly important where options are being rejected that are non-traditional for the person's gender, ethnic group, age, disability, or other factor. Once again, recognizing, understanding and dealing with these limiting expectations clears the way for movement beyond them.

6. *The myth of the "One Right Job" is detrimental and inaccurate.* Each individual can find success and satisfaction in a number of career options. Acceptance of this multipotentiality frees the individual for enlightened career decision making and planning for change. Today's young people must know from the outset that their generation will average four to nine jobs each in their lifetime career patterns and must plan to acquire generalizable work skills and habits, planning skills, and an attitude of flexibility.
7. *Self-concept and belief in self are of major importance.* An individual will choose only those options that he or she feels capable of doing. A significant expansion of these "possible options" can be achieved by experiencing life widely, trying out (and trying on) large numbers of roles and settings, particularly during the developmental years. We must encourage exploration in leisure pursuits, studies, friends, volunteer work, and early paid employment.
8. *Luck can be prepared for, not depended upon.* Laboratory researchers hold to the belief that "Chance favors the prepared mind." Adapted for career development, this principle states that the stronger the individual's background of self-understanding, developed skills, and acquired information, the greater the likelihood that he or she will successfully recognize chance and act upon it. An attitude of doing nothing while awaiting good fortune probably assures that it won't arrive.

There can be no doubt that our career development programs, in schools and agencies and private practices everywhere, are founded on a common philosophical base essentially like that offered above. While there is a great deal of wisdom embedded in the eight common principles listed, those which most concern career assessment are numbers 1, 2, 3 and 6. If we truly ascribe to these principles as counselors, we understand that any particular career decision for a student or client is merely a single instance in a lifetime of career choice points. Unless we plan to work with an increasingly dependent client again and again across the decades, *our professional responsibility is to assure that each person learns the process.*

This does not mean that clients need to be taught to test themselves. Instead, clients need to be taught to approach career choice points not as panicky crises, but as times to re-evaluate the opportunities offered in the workforce, to reassess their own present skills, interests and values through the evidence already available to them, to recognize when and if they need the further assistance available from a professional counselor, and to use the information to create short- and long-term career plans and initiate appropriate action.

How can our career assessments help to assure that the process is learned? Consider first the well-known fact that the results of our assessments rarely if ever surprise our clients. Rather, they confirm suspicions already held, validate self-knowledge, clarify connections, even reassure. The "magic" in our assessments is not that they dig out hidden secrets, but that they confirm the individual's own capacity to deal with the problem. Indeed, where our test data appear to conflict with client self-knowledge, the first rule of thumb is generally to disregard the test data, or at least be skeptical enough to verify it with further evidence.

The first lesson in teaching the process, then, may be to illustrate that good data gathering is essential for identifying and planning some career options. A second lesson is to illustrate what the various factors are on which an individual facing a career choice may wish to gather data. In a third step, the individual learns to evaluate the present status of his or her self-knowledge of these factors and to determine areas in which he or she may wish to obtain additional understanding. Fourth, the process will confirm that there are a number of possible ways to gather this additional information about oneself, of which formal testing is just one. While fascinating and often fun, it is not necessarily productive of any richer self-understanding than might derive from other means. Finally, teaching the step Parsons named "true reasoning" is facilitated if the data are gathered in systematic and congruent ways, conducive to insights into connections and relationships that may not have been seen before.

Clearly, the importance of this view of the career assessments we administer in public secondary schools is indisputable. We cannot fool ourselves into believing that a particular interest inventory given in the eighth grade because the curriculum calls for it will transform unwilling and disinterested adolescents into good career planners with decisions well underway. We do not even believe that of the aptitude battery we give in the eleventh grade. With these young people for whom "answers" may be developmentally inappropriate, the model of career assessment as a means of teaching and learning the process for the future is comfortable.

It is with older clients who are feeling the pressure of imminent choices that we have wanted to rush to provide answers. And it is with these most vulnerable clients that we must particularly caution ourselves against this role. Recall the adage that warns: "Give a man a fish and he eats for a day; teach him to fish and he eats for a lifetime." If we now accept that each person faces a lifetime of career choice points yet ahead, the need to teach the process even while offering more immediate assistance is inescapable.

A technical point is of value here. Counselors have long chafed over predictive validity as the cornerstone of quality in our career assessments. Rarely, if ever, are we concerned about predicting a client's future career from how he or she scores today on an interest inventory. What we do care about, intensely, is that the scores on interest inventories, and aptitude tests and other career assessments are useful today in making the client's explorations more productive. A few years ago, the measurement literature began to include references to "Exploration Validity" as a new indicator of quality in interest inventories. More recently, "Consequential Validity" as a somewhat more generic term covering behaviors undertaken by the client as a consequence of assessment has begun to appear. In a sense, this indicates that what practitioners have always known was the important factor has now been given credence by measurement experts. If the exploration which follows our use of assessments, and the actions undertaken by our clients as a result of learning the results of their assessments are the very proof that what we did was valid, then clearly our career assessments are a process.

It should be noted here that the very real difficulty of the "true reasoning" step should not surprise us. Bloom's et al. (1956) *Taxonomy* posits that the highest order thinking skills we can ask of the human mind are analysis and synthesis. These are the very skills required of an individual in making sense of his or her assessment results and assembling, from a variety of data from differing sources, some reasonable career options. Here the counselor's role is clearly that of demonstrating a difficult cognitive skill and teaching the process. For example, the counselor can propose some first tentative hypotheses which the student or client can consider for "fit" and accept, extend or replace with his or her own reasoned hypotheses.

If one important outcome that can be well served by career assessments is teaching the career decision-making and planning process for the choice points in the future as well as meeting today's decision needs, then an essential connection can be made to the *Comprehensive Developmental Guidance and Counseling Model* (Gysbers & Henderson, 1988) being adopted nationwide by associations, school districts and entire states. Career decision-making and planning skills are important outcomes deliverable to all students through a guidance curriculum. Counselors can and should share in education's accountability for delivering the learning of this process, and the career assessment program, most appropriately delivered in stages across several years, is an essential component of this teaching curriculum.

CAREER ASSESSMENT AS EMPOWERMENT

The final element of this four-part model for using career assessments to achieve a better standard of practice, Empowerment, follows directly from the discussion of Process above. What has been said from the outset in the discussion of shared beliefs is that career planning is the work of students and clients, not the work of the counselor. "Feeding them for a day" will not suffice for a lifetime of need. But if students and clients can learn the process through our teaching and demonstrating it, why are not all adults coasting along effortlessly and confidently employing their decision-making and planning skills through each career crisis and choice point?

The final difficulty is that they, and we, want to continue to see counselors as the experts. Taking one's life in to the career mechanic for regular maintenance or repair work is as attractive as taking one's car in. It shouldn't be. An expectation that this is not one's responsibility, that riding along without care for the future and then turning oneself over to an expert when decisions must be made is quite simply unrealistic, unreasonable, and a guarantee of failure over the long run with the many choices and crises ahead. Only major overhauls should need an expert's assistance after the beginning.

What is required, then, to ensure a self-sufficient lifetime career planner as the outcome of our interventions? Simply, that at no time are we actually taking control. We are not making the final interpretations of test data, only suggesting interpretations and asking clients to confirm and expand upon them. We are not assigning next follow-up steps, only proposing some examples and asking clients to propose others and then decide what they will do before we talk again. We are not picking some careers for clients to explore, only demonstrating with examples how the data are read and connected to information sources for exploration of some possible careers the client may want to check out.

Finally, we should not be *telling* the client very much at all, not even the meaning of the test results. Data from career assessments are better seen as questions for the client than as answers. For example: *Do these results fit with my expectations? What prior information or experience supports or contradicts these data? Are there some connections growing in my mind between how I did on these various tests? What other information do I need in order to feel comfortable taking the next step?* . . . .

Students or clients thinking like this have assumed control. They know the responsibility is theirs to make sense of the assessment data in their own lives, and they are prepared to use the data to inform and enrich their own explorations of possible choices. Can we get our eighth and ninth graders there? Only rare ones. Our eleventh and twelth graders? Many more. Our adult clients? Never all of them. But doing so can and must remain our intent. Job security might seem to rest in keeping our clients dependent, but that is security in some other job, not that of the professional counselor. We have agreed to turn out self-sufficient adults, empowered to take control of their lives.

Selected, administered and interpreted appropriately, then, career assessment instruments: OPEN avenues to explore, ENCOURAGE investigation, FACILITATE follow-up, and AFFIRM a process. They do not stop the process and give an answer. They REASSURE that the answers are within the client and EMPOWER that client to find them. Such is "best practice," to the limits of our ability to define it today.

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CHAPTER V

Assessment Competencies and Responsibilities: A Checklist for Counselors

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INTRODUCTION

This checklist provides a practical means for counselors to evaluate their testing competencies and practices. It is intended to cover the basics and should not be viewed as a comprehensive statement of all responsibilities and competencies involved in assessment. Since each item is considered to be important, there is no pass-fail score.

As used here, the terms, "test" or "assessment" subsume the various types of instruments covered by this *Counselor's Guide*—single tests, test batteries, inventories, card sorts, and various self-report scales. The term "counselee" is meant to include anyone to whom assessment instruments are administered (e.g., a sixth grader, college senior, or adult in the labor force). Items in the Interpretation section of the checklist refer to the use of tests in individual counseling. Relevance of items to the use of tests with groups and in consultation with other professionals or parents should be evident. Although some checklist items address computer-based assessments, the primary focus is on traditional use of tests. Counselors interested in computer applications may wish to consult the *Guidelines for Computer-Based Tests and Interpretations* (APA, 1986).

Much of the content of this revised checklist was adapted from resources cited at the end of this chapter. The American Counseling Association (ACA) policy statement, *Responsibilities of Users of Standardized Tests* (AACD, 1989), was especially helpful. Another major resource was *Standards for Educational and Psychological Testing* (AERA, APA, NCME, 1985). Other documents which relate directly to this checklist include: *Code of Fair Testing Practices in Education* (APA, 1988); *Multicultural Assessment Standards: A Compilation for Counselors* (Prediger, D. J., 1993), and *Responsible Test Use: Case Studies for Assessing Human Behavior* (Eyde, L. D., Robertson, G. J., Krug, S. E., and aasociates, 1993). The texts of several of these documents can be found in *Appendix C*.

Counselors wishing to improve their assessment skills in general will find *Appendix A*, (*Sources of Information about Testing and Career Assessment*) to be helpful. Although a number of test selection and interpretation responsibilities are cited in this checklist, Chapter III (*Selecting a Career Assessment Instrument*) and Chapter IV (*Using Assessment Instruments in Career Counseling*) provide more extensive suggestions.

BASIC CONCEPTS

Concepts important to the informal *use* of tests are listed below. Persons with final responsibility for *evaluating* and *selecting* assessment instruments will require knowledge beyond these basic concepts.

Use the following key in responding to the statements:

3 = I am able to apply the concept and explain it to others.
2 = I have some knowledge, but little experience in applying the concept.
1 = I have little or no knowledge of this concept.

Enter the appropriate number in the blank at the left of each statement.

1. STATISTICS USED IN TESTING AND TEST MANUALS

____ a. Measures of central tendency (mean, median, mode)
____ b. Measures of variability (range, variance, standard deviation)
____ c. Distributions (frequency, normal)
____ d. Scales of measurement (nominal, ordinal, interval, ratio)
____ e. Correlation coefficients (Pearson product-moment, point biserial)

2. TYPES OF INSTRUMENTS

____ a. Measures of maximum performance
____ b. Measures of typical performance
____ c. Similarities and differences among measures of intelligence, aptitude, ability, and achievement
____ d. Similarities and differences among self-reports, self-ratings, inventories, and tests

3. SCORE REPORTING PROCEDURES

____ a. Percentile ranks
____ b. Standard scores (including stanines)
____ c. Grade placement (equivalent) scores
____ d. Score profiles and profile analysis
____ e. Group similarity indices ("Your scores are similar to the scores of people who . . . .")
____ f. Expectancy (experience) tables
____ g. Estimates of probability of success and/or level of success; standard error of estimate

4. STANDARDIZATION AND NORMS

____ a. Standardized administration and scoring
____ b. Limitations of raw scores
____ c. Types of norms (e.g., local, national, gender, grade); their applications and limitations
____ d. Norm-based vs. criterion-referenced interpretation

5. RELIABILITY

____ a. Meaning of test reliability
____ b. Sources of measurement error
____ c. Types of test reliability (test-retest, parallel forms, internal consistency—including split-half, inter-rater)
____ d. Standard error of measurement and error bands

6. VALIDITY

____ a. Meaning of test validity
____ b. Implications of test use for validation procedures
____ c. Types of test validity (content, criterion-related, construct)
____ d. Factors affecting test validity (e.g., the "criterion problem")
____ e. Differential validity of test batteries for diverse criteria
____ f. Potential sources of bias affecting validity

RESPONSIBILITIES/COMPETENCIES

Test user responsibilities and concomitant competencies are listed in the next three sections:

Use the following key in responding to the statements:

3 = I do this routinely—as a regular practice.
2 = I have done this on occasion.
1 = I do not do this—but should give it consideration.

NA = Not applicable to the assessment instruments I am using. Enter the appropriate number in the blank at the left of each statement.

PREPARING FOR TEST USE

_____ 1. Avoid unnecessary testing by determining whether existing information can meet the needs of your counselees and institution.

_____ 2. Consider advertisements for tests, promotional brochures, catalog descriptions, etc., in the same manner as advertisements for any commercial product in a competitive marketplace.

_____ 3. Obtain and review up-to-date copies of the administration, interpretation, and technical manuals for any test you are seriously considering. If not qualified to evaluate the instrument, obtain help from a qualified supervisor or consultant.

_____ 4. Read professional reviews of the test—for example, in the *Journal of Counseling and Development*, the *Mental Measurements Yearbooks*, *Test Critiques*. (See Appendix A for more information.)

_____ 5. Determine whether the test's reading level is appropriate to your counselees.

_____ 6. Verify that the test items, norms, and score-reporting procedures minimize bias due to gender; racial, sexual orientation, ethnic, and cultural background; disability; or age.

_____ 7. Know whether you possess the qualifications (e.g., specific training and/or experience) required for use of a given assessment instrument. Apply the same criteria to anyone with delegated responsibility for assessing counselees.

_____ 8. Determine whether research shows that the instrument measures what you want it to measure; evaluate the basis for any cut-off scores or decision rules advocated for score interpretation.

_____ 9. Avoid an instrument that requires the comparison of a counselee's raw scores unless research shows that equal raw scores for each of the test's scales (e.g., interest type) indicate equal amounts of the characteristic being measured.

____ 10. Determine that computer-administered instruments meet the same standards as traditional paper-and-pencil instruments. For ability tests and other timed measures, determine that norms are appropriate to computerized administration.

____ 11. Examine the basis for occupational attribute descriptions (e.g., relevant abilities, work activities) used to link counselee characteristics (e.g., abilities, interests) to occupations. Determine whether the descriptions and links are justified.

____ 12. Before final adoption of an instrument, evaluate useability by administering and interpreting it to a small number of counselees. (See subsequent checklist items.) If possible, arrange to take the instrument yourself.

____ 13. Determine if test-takers are fluent in English or establish that the instrument reliability and validity will not be compromised by language difficulties.

____ 14. Make necessary modifications to the administration or interpretation of the instruments for counselees whose disabilities will affect their test taking.

ADMINISTRATION AND SCORING

____ 1. Acquire the training necessary to administer the instrument. Study the directions for administration and know whether additional materials (e.g., timer, scratch paper) are needed.

____ 2. Provide a training session for test administrators and proctors.

____ 3. Ensure that reasons for testing are understood and accepted by counselees—why the instrument is being given, what it can and cannot do, who will receive the test results, how they will be used.

____ 4. Maintain the security of assessment materials before, during, and after administration.

____ 5. Provide a testing room and psychological climate that allow each counselee to achieve optimal performance.

____ 6. Plan for special circumstances affecting the administration of an assessment instrument (e.g., late arrivals, disabled persons, left handers).

____ 7. Ensure that test administration directions are followed explicitly and completely.

____ 8. Determine, in advance, appropriate answers to questions about guessing, skipping questions, and using time efficiently.

____ 9. Note unusual behavior by any person(s) being tested. If the test results are not invalidated, consider whether a report of the unusual behavior should accompany the scores.

____ 10. Periodically rescore (if possible) a sample of machine-scored answer sheets to verify scoring accuracy.

____ 11. Periodically rescore a sample of "self-scored tests" to verify scoring accuracy. Routinely check the scores of counselees who, in your judgment, may have difficulty with self-scoring.

____ 12. Develop a system for dating, recording, maintaining the confidentiality of, and storing test results.

____ 13. If the instrument is computer administered, ascertain the counselee's computer literacy. For those unfamiliar with computers, provide training about how to take a computer-administered instrument.

INTERPRETATION

____ 1. Provide test interpretations based on documented bridges between scores and their real-world implications. That is, be sure your interpretations, including those provided on the score report and/or a computer terminal, are warranted by research conducted on the instrument.

____ 2. Initially, and periodically thereafter, discuss your interpretations with a qualified colleague.

____ 3. Review, with the counselee, the purpose and nature of the assessment—why it was given (e.g., its relevance to counselee goals); what the test can and cannot do; who will receive the results.

____ 4. Obtain the consent of the counselee before using assessment results for purposes other than those described prior to testing.

____ 5. Consider whether a counselee's reading level; gender; racial, sexual orientation, ethnic, and cultural background; disability; computer literacy; or age may have influenced the test results. Take such information into account in any reports of results.

_____ 6. Encourage counselees to discuss how they felt about the testing experience in general (e.g., did they see potential personal benefit?); their performance in particular; and any problems encountered (e.g., nervousness, fatigue, distractions).

_____ 7. Provide a simple explanation of measurement error and its implications, especially for score differences and profiles.

_____ 8. Help the counselee to think of assessment interpretations as hypotheses to be checked against past experience, compared with other information, tested via mutually planned activities, and periodically reviewed and modified.

_____ 9. Apply good counseling techniques to test interpretation by attending to the counselee first and test results second (e.g., by listening attentively and encouraging feedback); allowing sufficient time for the counselee to assimilate information and ask questions; checking the counselee's understanding from time to time; and correcting any misconceptions.

____ 10. Help the counselee begin (or continue) the career planning process by cooperatively identifying career options, steps for exploring the options, and criteria for evaluating the options.

____ 11. Monitor and encourage career planning activities through informal contacts, scheduled progress reports, or follow-through counseling sessions.

____ 12. In general, observe the Golden Rule of Assessment: "Administer and interpret unto others as you would have them do unto you."

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NOTE: This chapter is a revised version of a previous chapter by Dale J. Prediger and Nancy J. Garfield which appeared in the second edition of this book.

CHAPTER VI

Comprehensive Aptitude/Achievement and Companion Measures

ACT Career Planning Program (CPP)

ACT Staff Members

American College Testing (ACT)
2201 North Dodge Street
Educational Services Division
P.O. Box 168
Iowa City, IA 52243

Target Population: Grade 8 through adult.

Statement of the Purpose of the Instrument: The CPP helps counselees gain self-awareness, learn how the world of work is structured, and begin to explore personally relevant career options. Through six job clusters, a World-of-Work Map, and a narrative report, the CPP relates information about counselees to more than 450 occupations that employ over 95% of the work force.

Titles of Subtests, Scales, Scores Provided: Ability Test Battery (6 scores); Self-Rated Abilities (9 scores); UNIACT Interest Inventory (6 scores); Work-Related Experience Inventory (6 scores). Each provides results for data, ideas, people, and things work tasks. Job values are also assessed.

Forms and Levels Available, with Dates of Publication/Revision of Each: Level 1: Grades 8–10 (1983/1986); Level 2: Grades 11–adult (1983/1986).

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: ACT Career Planning Program Counselor's Manual (1994 Edition).

Languages in Which Available: English.

Time: Actual Test Time: 111 minutes.
Total Administration Time: 168 minutes.

Norm Group(s) on Which Scores Are Based: Nationally representative samples (1983) consisting of approximately 15,400 8th, 10th, and 12th graders in 115 schools.

Manner in Which Results Are Reported for Individuals

Types of Scores: Stanines, percentile ranks, World-of-Work Map "region" scores, and verbal labels based on stanines.

Report Format/Content

Basic Service: Two-page report provided. Page 1 organizes abilities, interests, experiences, and trial job-choices into six job clusters similar to Holland's Types. Page 2 provides narrative interpretation and score profiles. Counselees also receive a 24-page *Career Guidebook*.

Options: Up to 14 local option item responses can be printed on the score report or list report.

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Report Format/Content for Group Summaries

Options: Counselee list report; counselee results on magnetic tapes/diskettes; individual label reports; group summary report.

Scoring

Machine Scoring Service

Cost of basic service per counselee: Included in cost of answer folder and *Career Guidebook.*

Cost of Options: Group Summary Report ($50 for all persons tested) and List Report ($50 for all persons tested); Magnetic Tape/Diskettes ($125 for all persons tested); Individual Label Reports ($.10 each).

Hand-Scoring

Scored by: counselee; clerk; counselor.

Time required for scoring: About 5–12 minutes (Ability Tests only).

Local Machine Scoring: Not available.

Computer Software Options Available: Standard administration on-line; scoring; interpretation; Ability Test Battery administered and scored off-line.

Ways in which computer version differs: Scoring and interpretation are components of DISCOVER, ACT's computer-based career guidance and planning system.

Cost of Materials

Specimen Set: $10 per level

Counselee Materials: $4.00 per person for Career Planning Packet (includes Career Guidebook, answer folder, scoring, narrative score report), consumable; $.50 per person for Assessment Booklet with test items (reusable); **Counselor's Materials:** Counselor's Manual, n/c; Directions for Administration, n/c; Action Guide for warm-up, assessment, feedback, and follow-up, $5.00; Warm-up Interpretive Graphics, $4.00; World-of-Work Map Poster, $2.00; Psychometric Handbook, $5.00.

Additional Comments of Interest to Users: A self-scored "short form" of CPP is provided by the Vocational Interest, Experience, and Skill Assessment (VIESA). VIESA substitutes self-ratings of skills for the CPP Ability Test Battery.

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Reviewed By

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DESCRIPTION

There are two levels of the ACT Career Planning Program (CPP): Level 1 for grades 8–10 and Level 2 for grades 11–12 and adults. The CPP is recommended by the publisher as a career guidance model, a career development course, an organizing theme for a career resource center, and a prediction tool for secondary school students. Postsecondary uses listed are in high school outreach programs in cooperation with receiving institutions in the area, adult outreach programs in community guidance centers, admission and placement programs in postsecondary institutions, and career development courses in such institutions.

The Program includes an assessment battery, national norms collected in 1983, a 99-page counselor's *Action Guide* (1992), transparency masters, *World of Work Map* (2nd Edition) in poster form, Career Guidebooks for students—*Exploring Your Future*-Level 1 and *Planning Your Future*-Level 2 (1990), *Counselor's Manual* (1992 Interim Edition), and *Index to Descriptions of Occupations* (1991).

There are also the usual *Directions for Administration* of the measures (exhaustingly, but perhaps necessarily, detailed) and a decidedly unusual abundance of technical information including *Interim Psychometric Handbook for the 3rd Edition ACT Career Planning Program* (1988 Update), *Supplement 1* (1988) to the *Interim Handbook*, publications in the ACT Research Report Series, and articles in various journals. Significant among the articles is Prediger's (1989) defense of specialized abilities as having more work relevance than *g* (Spearman's general cognitive ability factor). The ability measures in the CPP battery are measures of special abilities.

The CPP was developed originally in 1969–1971 by staff members in the Research and Development department of ACT, the Second Edition was introduced in 1977, and the Third Edition was published in 1983. The norms for the assessment battery are based on national administrations in 1983 to students in grades 8, 10, and 12.

The assessment part of the Program, which is the main focus of this review, has 11 units, described below, along with some commentary. It will take students almost three hours to take all of the measures. However, ACT suggests that they can be administered in several shorter sessions.

Background and Plans: Biographical information, educational and vocational plans, students' perceptions of their own educational needs (e.g., study skills). Level 2 includes six more items than Level 1; they relate specifically to postsecondary plans.

Work-Related Experiences: Ninety activity items (e.g., "Discussed the theory of evolution," "Took a group of children on a field trip") presented in six groups. Students indicate whether they've performed each activity "never," "only once or twice," or "several times." Students taking Level 2 are also asked to indicate the two (of the six) groups in which they've had the *most* and *least* experience. This process yields six scores paralleling the interest scales, based on the sound principle that "interest scores have greater construct validity when counselees have had related experiences."

Self-Ratings of Abilities: Scientific, Creative/Artistic, Creative/Literary, Helping Others, Meeting People, Sales, Leadership/Management, Organization, Manual Dexterity.

The ACT Interest Inventory (also available separately as UNIACT): Examinees are asked about their liking for 90 activities (somewhat different sets for grades 11–12 and for postsecondary individuals). The interest inventory yields scores for Business Contact, Business Operations, Social Service, Technical, Arts, Science.

Reading Skills: Five short passages and 40 items based on them. Most of the items appear to measure factual retrieval. The passages and questions in Level 1 and Level 2 are somewhat different. Some of the material in both forms seems rather dated; for example, "In 1980, the average salary for industrial designers was about $1,500 a month . . . ." (timed: 20 minutes).

Language Usage: Sixty-four items presented as statements with four underlined parts; e.g., Many College students have not chose their majors when they arrived. Examinees mark whether each part is correct or incorrect. Different items on Level 1 and Level 2. Some items involve punctuation/capitalization (timed: 11 minutes).

Clerical Speed/Accuracy: Thirty-five items requiring examinees to look up on a chart the cost of shipping a given number of pounds a given number of miles. Items may be tapping some quantitative skills as well as clerical speed/accuracy, since examinees must not only find a number on the chart, but also identify a *range* in which the number occurs (timed: 5 minutes).

Space Relations: Thirty-five items in which examinees indicate how many blocks are touching in drawings of "bricks" stacked in various configurations. Same tasks for Levels 1 and 2 (timed: 9 minutes).

Numerical Skills: Thirty-two items including straight addition, subtraction, multiplication, division with two quantities (integers, decimals, fractions, mixed numbers), and a few word problems. There is a great deal of overlap between Level 1 and Level 2 items, and some items may amuse teenagers who know anything about prices or wages today; for example, three grapefruit for 80 cents (timed: 18 minutes).

Mechanical Reasoning: Thirty items assessing understanding of the way mechanical and nonmechanical objects function. For example, two hammers are pictured, identical except that the handle of one is longer than the handle of the other; examinees are asked, "With which hammer would less force be needed to remove the nail?" (timed: 12 minutes).

Local Items: Provision is made for up to 14 local items of information. Samples are given in the *Action Guide* for both secondary and postsecondary uses.

The score reports for students present, in understandable form, the results on each of the measures (high, medium, or low) keyed to job clusters and job families (with sample jobs), detailed instructions to students for using the report and relating the results to the World of Work Map, summary information for counselors and advisors (including student reports on high school achievement and areas in which they think they need special help), and predictions of ACT Assessment scores. The ACT Assessment Composite scores are predicted from scores on CPP Reading Skills, Language Usage, and Numerical Skills. The multiple correlation, based on scores of 1679 11th and 12th graders, was .83 (standard error of estimate 2.39).

USE IN COUNSELING

The publisher suggests four modes of using the CPP in secondary schools and four more for postsecondary uses, as listed in the first paragraph of this review. Beyond these prescriptions, counselors are provided with a host of well-designed aids. However, in the opinion of this reviewer, the measures do not come up to the standards set by the context; the interpretations seem better than the data that generate them. Counselors, on the basis of reviews such as this, and, most important, their own reviews, will have to decide for themselves whether the benefits derived from the CPP are worth the effort involved.

The CPP has the definite advantages of comprehensibility (counselors can make it a *whole* program if they want to); unisex norms; clear distinctions among ability, aptitudes, experiences, and interests; provision for local input; a choice of processing options; eminently readable reports with clear follow-up activities; and well-defined relationships to the world of work. The measures *seem* to be at appropriate reading levels for the intended population of examinees, though the publisher's defense of the reading levels raises some questions. Counselors (with the help of teachers) will simply have to examine the CPP in light of their knowledge of the reading capabilities of the students they are trying to help. In terms of counselor use, the CPP is enormously complicated in sheer amount of materials.

TECHNICAL CONSIDERATIONS

The norms were established in 1983 on national samples of students in grades 8, 10, and 12. Norms for grades 9 and 11 were estimated by statistical "interpolation." Grade 12 norms are used with postsecondary examinees. According to the publisher, "The decision to use Grade 12 norms with adults, rather than to develop some special reference group norms, was based primarily on the clarity with which the Grade 12 norms could be defined—that is, a nationally representative sample of high school seniors."

Students' scores are reported in stanines based on these norms. Ability, interest, and experience labels are also used. For the tested abilities (Units 5–10), the labels are Low (in the lowest quarter of the norms group, stanines 1–3), Medium (in the middle half of the norms group, stanines 4–6), and High (top quarter of the norms group, stanines 7–9). Interest results, reported by Job Clusters, are labeled Highest, Middle, and Lowest. The same labels are used for Experience and, as with Interest labels, indicate the rank of the corresponding scale *within the individual's own profile*.

The ability tests are brief, but the reported reliabilities seem high enough for the career guidance purposes of the CPP. Internal consistency estimates, based on Kuder-Richardson 20, range from .70 to .91 for the ability tests in grade 8, from .79 to .92 in grade 10, and from .81 to .91 in grade 12. Test-retest reliability over a 2-week period for a group of 11th graders on a one-minute longer form of Clerical Speed/Accuracy was .74. Internal consistency estimates based on coefficient Alpha were used for the Interest and Work-Related Experience scales. For grade 10, for the Interest scales Alphas ranged from .81 to .92; for the Experience Scales, .76 to .91. Test-retest reliabilities (or stability indices) were also obtained for these measures on either the 1983 or earlier versions. The results were satisfactory.

Validity evidence cited for the CPP include construct, concurrent, and predictive studies. In terms of construct validity, the Interest, Experience, and Ability composite scores assigned to a job cluster (e.g., Social Service, Business Contact) have in most cases been more highly related to that job cluster than to other job clusters. The intercorrelations among the ability measures have generally been found to be moderate.

Of most significance in judging the construct validity of the CPP is its rational basis, which is rather thoroughly spelled out in the *Manual* and the *Handbook*. (The research underlying the work is summarized by Prediger, 1976, 1981.) First, ACT developed an Occupational Classification System to organize occupations in the CPP. It involves six job clusters that are "similar in nature" to the occupational groups described by well-known researchers in the field; two to six job families subsumed by each job cluster for a total of 23 job families; three types of formal preparation (HS, HS + one or two years, HS + four or more years); and occupational titles grouped according to job cluster, job family, and formal preparation. The information is further analyzed into two bipolar dimensions of work tasks, Data/Ideas and Things/People, which are also related to work by Holland (1973) and other professionals.

To provide estimates of concurrent validity, scores on the CPP ability measures have been correlated with scores on other ability tests; e.g., the Differential Aptitude Tests (DAT), the Armed Services Vocational Aptitude Battery (ASVAB), and the National Educational Development Test (NEDT). Correlations between CPP Reading Skills and DAT Verbal Reasoning ranged from .66 to .76, and other correlations followed reasonable patterns.

For predictive validity, scores on measures and combinations of measures have been related to grades in high school courses. For example, in one school, the correlation between Numerical Skills and 9th-grade Pre-Algebra grades was .54; between Numerical Skills and 9th-grade Language Arts grades, .28. However, many other correlations between single measures and high school courses did not conform to expected patterns. Composite scores generally showed higher relationships; for example, Reading Skills + Language Usage correlated .69 with English grades in another school. At four of the schools where studies were conducted, correlations between 11th-grade GPA and a composite of Reading Skills, Numerical Skills, and Language Usage scores ranged from .54 to .70. Other studies described by the publisher include predictions of community college grades from CPP measures, job satisfaction from Interest scores obtained six years earlier, and satisfaction/success in vocational programs from the job clusters recommended for student exploration (about four out of five seniors completing vocational programs in the relevant job clusters were satisfied and/or successful).

OVERALL CRITIQUE

The strongest features of the CPP are the career map that underlies it, though one may quibble over some of its details, and the guidance it offers counselors and students in exploring careers. Exploration is supported by clear distinctions among abilities, interests, and experiences, well-designed student report forms and counselor guides, unisex norms and lack of sex bias in the interest and experience items, and great amounts of research on one or more of the forms. The very comprehensiveness of the program and the number of "pieces" of reading material may, however, be daunting to busy counselors. Another drawback is that some of the measures and items seem dated for today's students.

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Adult Basic Learning Examination, 2nd Edition (ABLE)

Bjorn Karlsen and Eric F. Gardner

The Psychological Corporation
555 Academic Court
San Antonio, TX 78204-2498

Target Population: Adults ages 16 and up.

Statement of the Purpose of the Instrument: ABLE is a battery of tests designed to measure the level of educational achievement of adults. The examination consists of items with adult content, and it may be used to assess the achievement level of adults who have had varying amounts of formal schooling.

Titles of Subtests, Scales, Scores Provided: Level 1 includes five subtests: vocabulary, reading comprehension, spelling, number operations, and problem solving. Levels 2 and 3 include the same five subtests as Level 1 and an additional subtest, language. The *Screening Battery* and the *Screening Battery*, Spanish Edition, include two subtests: Reading Comprehension and Problem Solving. *SelectABLE*, a screening device to be used in conjunction with ABLE, is also available. The *SelectABLE* score is a means of determining which level of ABLE is most appropriate for an individual.

Forms and Levels Available, with Dates of Publication/Revision of Each: ABLE Level 1, Level 2, and Level 3, Forms E and F, published in 1986; *ABLE Screening Battery*, Level 2 Form F, published in 1988; *ABLE Screening Battery*, Spanish Edition, Level 2 Form E, published in 1990; *SelectABLE*, published in 1986.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: Levels 1, 2, or 3 *Norms Booklets* (1986); the *Norms Booklet Supplement*, Spanish Edition (1991); *The Handbook of Instructional Techniques and Materials* (1986); the *SelectABLE Handbook* (1986); the *Reading Supplement* (1987).

Languages in Which Available: *Screening Battery*, Spanish Edition, published in 1989.

Time: Actual Test Time: Level 1, 130 minutes; Level 2 or Level 3, 175 minutes; *Screening Battery*, 70 minutes; *Screening Battery*, Spanish Edition, 70 minutes.
Total Administration Time: Level 1, 155 minutes; Level 2 or Level 3, 205 minutes; *Screening Battery*, 80 minutes; *Screening Battery*, Spanish Edition, 80 minutes.
Times are approximate—ABLE is untimed.

Norm Group(s) on Which Scores Are Based: 4,000 adults in 132 adult basic education, prison, or vocational technical school programs in 41 states.

Manner in Which Results Are Reported for Individuals

Types of Scores: Scaled scores, percentile ranks, stanines, grade equivalents, and normal curve equivalents for adults participating in adult basic education, prison, or vocational-technical programs, as well as combined group.

Scoring

Hand-Scoring

Scored by: counselor.

Time required for scoring: Immediate, if using *Ready-Score*™ answer documents. These documents record and score test responses at the same time. Scoring keys are also available.

Local Machine Scoring: ABLE *Computer Scoring* can be used with any computer that is fully compatible with IBM PC, XT, or AT, operating with IBM PC DOS 2.0 or above, 640K or RAM, and a hard disk.

Computer Software Options Available: Not available.

Cost of Materials (Prices valid through December 31, 1994)

Specimen Set: ABLE Examination Kit = $40.00; ABLE *Screening Battery* Examination Kit = $13.00; ABLE *Screening Battery*, Spanish Edition, Examination Kit = $40.00.

Counselee Materials: *SelectABLE Ready-Score*™ answer sheets, package of 25, includes Group Record and *Handbook = $42.50; *SelectABLE* hand-scorable test sheets, package of 50 = $40.00; *ABLE *Screening Battery* test booklets, package of 25, with Directions = $43.50; ABLE *Screening Battery*, Spanish Edition, test booklets with Directions, package of 25 = $44.50; ABLE *Screening Battery* or ABLE *Screening Battery*, Spanish Edition, *Ready-Score*™ answer documents, package of 25 = $35.00; *ABLE Level 2 or Level 3 (Forms E or F) test booklets, package of 25 = $56.00; ABLE Level 1 (Forms E or F) test booklets, package of 25 = $56.00; ABLE Level 2 or Level 3 (Forms E or F) *REady-Score*™ answer documents, package of 25 = $47.50; Level 1 or 2 (Forms E or F) Hand-scorable answer sheets, package of 50 with Group Records = $40.00; **SelectABLE* scoring keys = $23.50; *ABLE Levels 1, 2, or 3 scoring keys (Forms E or F) = $48.50; **Norms Booklets*, Levels 1, 2, or 3 = $31.50; **Handbook of Instructional Techniques and Materials* (all levels) = $26.00; **Reading Supplement* (all levels) = $8.50; *Extra *Directions for Administering* = $7.00; *Extra Level 1, 2, or 3 *Directions for Administering the Screening Battery* or the *Screening Battery*, Spanish Edition = $7.00; Levels 1, 2, or 3 Group Records = $4.50; *ABLE, Spanish Edition, *Norms Booklet Supplement* = $7.00.

* Indicates reusable.

Additional Comments of Interest to Users: ABLE *Computer Scoring* is a system that can scan answer documents on an NCS Sentry 3000, OpScan 5, Scantron 1400, 5200, or 9000 Scanner, and all compatible full-page Scantron scanners. ABLE *Computer Scoring* can be used with any computer that is fully compatible with IBM PC, XT, or AT, operating with IBM PC DOS 2.0 or above, 640K of RAM, and a hard disk. ABLE *Computer Scoring* allows the user to choose from a variety of reports: Individual, Exceptions Report, Record Label, Item Analysis, *Screening Battery* Report, Summary Report, Master List, and Master Summary.

These reports are available for the following norm groups: adult basic education, prison, vocational technical, combined group, or local. ABLE *Computer Scoring* software disks (5 1/4" or 3 1/2") = $522.00; ABLE machine-scorable answer documents for use with Scantron 1400 and 5200 scanners, package of 50 = $44.50; Universal Header Sheets, package of 35 = $11.00. (Prices valid through December 31, 1994.)

Published Reviews:

Fitzpatrick, A. R. (1992). Review of Adult Basic Learning Examination, (2nd ed.). In J. J. Kramer & J. C. Conoley (Eds.), *Eleventh mental measurements yearbook*. Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

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Reviewed By

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DESCRIPTION

The purpose of the Adult Basic Learning Examination (ABLE), as stated by the publishers in their overview of the test in the *Directions for Administering* (Karlsen & Gardner, 1986), is "to measure the level of educational achievement among adults." The second edition of the ABLE is a high quality, professional publication. All materials are well developed, organized, readable, attractive and useful. SelectABLE is a useful addition to the three level ABLE of the previous edition.

SelectABLE, a 45-item, untimed (estimated time needed is 15 minutes) screening test for placing examinees at the appropriate ABLE level, is especially useful when limited educational information about the examinees is available. Procedures for administering, scoring, and interpreting SelectABLE are clear and meaningful. The tables provided are simple and easy to read.

The ABLE is a power test which allows examinees to demonstrate their abilities without constraint of time. For Level 1, examinees mark in the test booklet; for Levels 2 and 3, answer sheets are used. The following is a description of the subtests of ABLE, Levels 1, 2, and 3.

Vocabulary: The examinee is to recognize the meaning of words encountered in everyday situations (16 words), in the natural and physical sciences (8 words), and in the social sciences (8 words). The examinee chooses the word or group of words which best completes each sentence. For Level 1, the sentence and the options are read to the examinee. The examinee marks the answer booklet. For Levels 2 and 3, the examples are read to the examinee, then the examinee reads and answers the 32 items.

Reading Comprehension: At Level 1 (40 times) the examinee comprehends simple signs (9 items), completes sentences within short reading passages using the cloze technique (18 items), and reads and comprehends advertisements and short reading passages (13 items). In each item, the examinee selects the word or phrase which best completes a sentence. Levels 2 and 3 (48 items), evaluate functional reading, which is printed material typically encountered in everyday life (24 items), and educational reading, which is material found in informational pieces and content area textbooks (24 items). Both literal (24 items) and inferential (24 items) comprehension is assessed. The use of the cloze technique recognizes the meta-cognitive and meta-linguistic aspects of reading comprehension.

Spelling: At Level 1, 30 items are dictated; the word is written in the test booklet. At Level 2 (30 items) and Level 3 (30 items), the examinee is to select the misspelled word. This reviewer questions the face validity of this subtest at Levels 2 and 3. The ability to identify a misspelled word is not a measure of spelling ability, but is proofreading ability and should be identified as such. Level 1 measures spelling ability, Levels 2 and 3 do not.

Language: At Levels 2 and 3 only (30 items at each level), the examinee selects the correct punctuation (11 items) and capitalization (7 items) for complete sentences. For 12 items the examinee selects the word or group of words which provides the correct grammatical completion of a sentence.

These items are appropriate to assess the mechanics of written language. There is no assessment of the examinee's production of written or oral expressive language. Users will want to recognize these limitations of this language assessment.

Number Operations: At Level 1 (20 items), concepts of number items (5 items) are dictated to the examinee, computation items (15 items) are completed by the examinee. Responses are written in the test booklet. At Level 2 (36 items, 7 concepts of number and 29 computation) and 3 (40 items, 7 concepts of number and 33 computation), the examinee selects the correct solution to a problem from five alternatives, one of which is sometimes "NG" for not given.

At Level 1, some of the first five items seem difficult; for example, the examinee is required to "write thirty-two thousand forty-five in numerals" and to "write 1257 in words." Other items at this level and items in the other levels seem appropriate.

Problem Solving: At Level 1, the 20 items and the four alternative answers, one of which is "NG" for not given, are read to the examinee who responds in the answer booklet. At Level 2 (30 items) and Level 3 (40 items), problems are solved by the examinee and answers are selected from five alternatives, one of which is sometimes "NG" for not given. These items seem appropriate in difficulty and adult in content.

USE IN COUNSELING

The ABLE is useful when standardized assessment of academic achievement, expressed in scaled scores, percentile ranks, stanines and/or grade level equivalents is needed. Also, the collateral materials including a *Handbook of Instructional Techniques and Materials* (Karlsen & Garner, 1986) is useful in evaluating individual performance for educational planning and curriculum development.

Likely uses of ABLE scores for career counseling situations include assessing functional literacy, employability skills, and ability to profit from training. Furthermore, the scores could be used where ability information is usually employed. However, it must be remembered that scores represent what the client knows or can do in the areas measured and not the potential to learn these skills if given the opportunity. Results from the ABLE Level 3 have been approved by the U.S. Secretary of Education for "ability to benefit" admissions.

TECHNICAL CONSIDERATIONS

The authors present ABLE users with detailed guidance in understanding the types of scores, including a clear, usable discussion of content-referenced and norm-referenced scores. Tables of scores are well labeled, clear and easy to read.

There are enlightening, useful tables of the objectives and p-values (percentage of the combined group sample answering the item correctly) given for each subtest at each level.

All normative data, reliability and validity information seem to be based upon the 3,471 subjects drawn from adults involved in 132 community, school and prison adult basic education, high school equivalency programs or joint vocational-technical high school programs in 41 states. These sample sizes are: at Level 1, Adult Basic Education and/or General Education Development (ABE/GED) N = 291; Prison Group N = 565; at Level 2, ABE/GED N = 436; Prison Group N = 472; and at Level 3, ABE/GED N = 474; Prison Group N = 515; Vocational-Technical Group N = 718.

Demographic data of the participating adults suggest that characteristics of sex and race are not proportionally represented by the sample. Age and geographic region characteristics are more balanced. The user is encouraged to be aware of the demographics of the research sample and to consider the characteristics of their examinees when selecting a norm table. Norms for the ABLE are not discussed, but the development of local norms is recommended by the authors.

Reliability was determined using Kuder-Richardson Formula 21. For Level 1, Forms E and F, all subsets have reliability coefficients > .80 for the GED/ABE population. For the prison population, Vocabulary, Number Operations and Problem Solving have questionable reliability (< .80), while Reading and Spelling have reliability coefficients above .80. For the combined group, all subtests have reliability coefficients above .80 except Form E, Number Operations and Problem Solving, and Form F, Problem Solving. For Level 2, Forms E and F, all subtests of both forms have sufficiently high reliability for all groups except for Vocabulary (both forms) for the prison group (.79). For Level 3, Forms E and F, all subtests yielded coefficients above .80 for all groups except for Vocabulary (Form E) for the ABE/GED group (.78).

All subtests for all levels, except for Spelling, Level 1, have a grade equivalent range of PK (pre-kindergarten) to PHS (post-high school). With such a wide range of scores, the difference of a few raw score points may cause wide differences in grade level equivalents. Not all subtests or all levels are significantly influenced. The user is encouraged to examine each subtest (at each level for each sample) to determine the impact on their examinees' performances. Further, all subtests have a standard error of measurement of at least two raw score points.

There is a discussion of the validity of each level of ABLE. Objectives measured by each level are stated and related to specific items, allowing users to evaluate content validity easily. This reviewer's opinion is that the content validity is good, except for spelling in Levels 2 and 3, as noted above.

OVERALL CRITIQUE

For counselors who need an assessment of the educational level of adults with limited education, or for pre/post-test measures of educational development, ABLE is a useful, efficient assessment. SelectABLE, a screening device for placement in the correct level of ABLE, is a useful addition. The collateral materials are well developed, readable, and useful. The lack of specific information about the norm development is disappointing. The problem of having a few test items represent a wide range of grade level equivalents persists. SelectABLE and ABLE are useful tools for their intended purposes. Users are encouraged to keep these limitations in mind.

For counselors interested in the functional literacy and/or employability skills of clients, the Comprehensive Adult Student Assessment System (CASAS) might be explored. This System reflects a life-skill competency based assessment and curriculum, as compared to the academic achievement basis of the ABLE.

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NOTE: Portions of this review were abridged from the author's original review in the *Eleventh Mental Measurements Yearbook* with permission of the Buros Institute.

APTICOM

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Philadelphia, PA 19102

Target Population: Adolescents and adults reading at or above the 4th grade level.

Statement of the Purpose of the Instrument: APTICOM is a multi-dimensional general purpose vocational assessment and guidance system that is driven by a dedicated microcomputer. Assessment batteries (Aptitude, Interest and Educational Skills Development) are founded upon U.S. Department of Labor job matching constructs, and vocational recommendations generated by the system are consistent with the U.S. Department of Labor's occupational classification structure as expressed in the *Guide for Occupational Exploration*. The system automatically times and scores assessment instruments and then synthesizes aptitude and interest results in order to identify viable job families (Work Groups). Results on the Educational Skills Development Battery (work-related math and language achievement tests) are then compared against occupational standards for representative high growth/high demand job titles nested within the Work Group.

Titles of Subtests, Scales, Scores Provided:
Aptitude Subtests: Object identification, abstract shape matching, clerical matching, eye-hand-foot coordination, pattern visualization, computation, finger dexterity, numerical reasoning, manual dexterity, word meanings, eye-hand coordination.
Aptitude Scales: (G) general intelligence, (V) verbal, (N) numerical, (S) spatial, (P) form perception, (Q) clerical perception, (K) motor coordination, (F) finger dexterity, (M) manual dexterity, (E) eye-hand-foot coordination.
Interest Battery Scales: Artistic, scientific, plants & animals, protective, mechanical, industrial, business detail, selling, accommodating, humanitarian, leading & influencing, physical performing
Educational Skills Development Scales (Math and Language): GED level 1 (grades 1–3), GED level 2 (grades 4–6), GED level 3 (grades 7–8), GED level 4 (grades 9–12).
Educational Skills Development Domains (raw scores only): Language domains: spelling, vocabulary, reference skills, punctuation/capitalization, verb forms.
Spanish language domains: vocabulary, word forms, grammar, reference skills.
Math domains: computation, measurement, ratio/percent, algebra, geometry, trigonometry.

Forms and Levels Available, with Dates of Publication/Revision of Each: Publication Date: 1985; output reports revised/updated in 1992.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: System Operation, Administration & Scoring Manual—1991; System Technical Manual—1985; Handbook for Spanish Language Administration—1986; Operation & Interpretation Workbook—1986.

Languages in Which Available: English & Spanish.

Time: Actual Test Time: Aptitude Battery, 29.25 minutes. Interest Inventory, 15.00 minutes. Educational Skills, 25.00 minutes. Total, 69.25 minutes.

Total Administration Time: Aptitude Battery, 45 minutes. Interest Inventory, 15 minutes. Educational Skills, 30 minutes. Total, 90 minutes.

Norm Group(s) on Which Scores Are Based:

Aptitude Battery: Adults, 10th graders, 9th graders.

Interest Inventory: Individuals above 18 years of age versus individuals below 18 years of age.

Educational Skills: N/A (criterion referenced tests).

Manner in Which Results Are Reported for Individuals

Types of Scores:

Aptitude Battery: Subtests—number correct, number attempted, standard scores (deviation scores). Aptitude Scales—standard scores (deviation scores), percentile ranks, bar graphs.

Interest Inventory: Interest Scales—# "LIKE," # "?", # "DISLIKE," Percentile Standing compared to Total Age-Appropriate Norm Group, Percentile Standing compared to males & females within age appropriate norm group, Standard Score compared to total age appropriate norm group, bar graphs, Individual Profile Analysis—reports relatively high scales within individual profile of 12 scales.

Educational Skills Development Battery: Scale Scores—# Correct per scale, # attempted per scale, maximum scale score, pass versus fail scale. Performance Analysis—# correct responses by functional domain within scale, e.g. number correct in algebra at level 3 (grade 7–8).

Report Format/Content:

Basic Service: When APTICOM is linked to a computer printer it generates a cover page, a complete score report with explanatory narrative for each battery administered, a set of Vocational Recommendations and a Legend defining all terms and scales used in the report.

Options: Report Options permit user to include or exclude data on any of the batteries in a report and to customize reports by using a condensed Summary Score Report, by selecting alternative norm bases, by excluding Work Group Descriptive narrative and/or job titles from the Vocational Recommendations, by adding additional score report and recommendations based on adding the standard error of measure to aptitude scores, and/or by excluding the Legend from the report.

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service: As indicated, APTICOM is itself a dedicated computer; it scores and automatically prints reports when linked to a printer. Therefore, the only cost associated with scoring (or administration) is the paper consumed in printing the report.

Hand-Scoring: Protocols and photocopiable forms are provided for hand scoring by the counselor or a clerk once raw scores have been displayed on a window on the console. Hand scoring requires approximately five minutes if all three batteries are scored.

Local Machine Scoring: Not available.

Computer Software Options Available: APTICOM scores and reports can be downloaded to microcomputers—VRI supplies the necessary software upon customer request at no charge.

VRI does publish the interest inventory separately as the Vocational Research Interest Inventory. It is available in paper and pencil, as software for microcomputer administration and report generation, and in a scannable version which can be locally machine-scored using VRII Scannable software and a SCANTRON reader or can be scored on a mail-in basis at a cost of $,95 per counselee.

Cost of Materials

Specimen Set: N/A—sales representatives make no-charge, no-obligation visits to demonstrate APTICOM.

Counselee Materials: Cost is equal to that of computer paper used to print reports.

Additional Comments of Interest to Users: On-site training is always provided as part of the purchase of APTICOM, and expert customer assistance is available via a toll-free number, again at no charge. Updates to the APTICOM system are always engineered so that existing users will easily be able to upgrade.

Published Reviews:

Botterbusch, K. F. (1988). Review of Apticom. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to career assessment instruments, (2nd ed.)*. Alexandria, VA: National Career Development Association.

Botterbusch, K. F. (1987). *Vocational assessment and evaluation systems: A comparison.* Menomonie, WI: Materials Development Center.

Greene County School Systems. (1986). *Apticom assessment, Greenville City.* Greenville, TN: Author.

Gucwa, B., Splete, H., & Stum, D. (1985). Vocational Assessment Systems: A review of Apticom, MESA and SAGE. *Michigan Personnel and Guidance Journal, 16* (1, Winter).

Law, J. G., Jr. (1992). Review of the Vocational Research Interest Inventory. In J. J. Kramer & J. C. Conoley (Eds.), *Eleventh mental measurements yearbook.* Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

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DESCRIPTION

The APTICOM, first copyrighted in 1982, provides a time-efficient, individually administered assessment of aptitudes, occupational interests, and educational skills development for high school students and adults reading at or above the fourth grade level. The APTICOM is commonly used for English or Spanish speaking secondary age students and adults identified as being disadvantaged or being eligible for special education or vocational rehabilitation services (Evans, 1985; Greene County School Systems, 1986).

APTICOM consists of three test batteries: the Aptitude Test Battery, the Occupational Interest Inventory, and the Educational Skills Development Battery. APTICOM incorporates results of the quick assessment of aptitudes, interests, and basic language and math skills to recommend potential job matches to be considered by the client. One and one-half hours are required for skilled administration of the three batteries, although actual test times total 70 minutes. The APTICOM, administered and scored on a specialized computer which has no screen or keyboard, costs over $6,000 including printer. A series of two-by-three-foot plastic sub-test templates are attached by the test administrator to a two-by-three-foot backboard which contains several rows and columns of small switch ports. The test administrator controls all APTICOM testing operations with switches and buttons located on the back of the unit.

The test taker selects from multiple choices on templates or performs manipulative tasks on the various sub-tests by inserting a wired probe into the appropriate port. Additional manipulative and dexterity tasks are performed with a foot switch and an external dexterity device which interfaces with the computer. The computer automatically times each practice and test episode, then records the scores and provides an interpretive report at the end of the session. The test administrator provides scripted instructions and demonstrations, sets up templates and dexterity devises and signals the computer to start each timed section. The *APTICOM System Operation, Administration and Scoring Manual* (Harris & Dansky, 1991) provides clear, comprehensive instructions including readable large print administration script within distinct borders.

The APTICOM Aptitude Test Battery, designed to emulate the *General Aptitude Test Battery* (GATB), measures 10 aptitudes which correspond to 10 of the 11 provided by the GATB, excluding only color discrimination. The 10 APTICOM aptitude categories are general learning ability (G), verbal aptitude (V), numerical aptitude (N), spatial aptitude (S), form perception (P), clerical perception (C), motor coordination (K), finger dexterity (F), manual dexterity (M), and eye-hand-foot coordination (E). These 10 aptitudes are measured on the following 11 sub-tests: Object identification, abstract shape matching, clerical matching, eye-hand-foot coordination, pattern visualization, computation, finger dexterity, numerical reasoning, manual dexterity, word meaning, and eye-hand coordination.

While most of the subtests require the subject to select from multiple choices presented on templates on the big board, the eye-hand and eye-hand-foot subtests require rapid and accurate manipulations on the big board and foot switch. The finger dexterity and manual dexterity exercises require rapid sequential manipulations on the external interfaced devises. While all subtests are timed, most combine power and speed.

The second APTICOM battery, the 162-item Occupational Interest Inventory, parallels the structure and function of the U. S. Department of Labor's (DOL) USES Interest Inventory. Like USES-II, the APTICOM Occupational Interest Inventory draws its occupational descriptions and activities directly from the DOL's *Guide for Occupational Exploration* (GOE) and *Dictionary of Occupational Titles* (DOT).

The test taker makes a choice from three options (like, ?, or dislike) for each occupational description or activity presented on the interest inventory templates by inserting the probe in the appropriate port. The number of "likes" selected in each interest category determines the raw scores for the 12 APTICOM interest areas which correspond to the 12 GOE and USES-II interest areas.

The APTICOM Educational Skills Development Battery (ESDB) was designed to measure functional, work-related math, and language skills according to the DOL's six General Educational Development (GED) levels. While the DOL's GED levels five and six relate to college achievement levels, the APTICOM ESDB levels were deliberately limited to the first four GED levels which are rated as equivalent to skill development in grades 1 through 12.

The last APTICOM battery to be developed, the ESDB provides the basis for screening GED performance levels against those levels needed to perform specific jobs. The Language Skills Development and Math Skills Development tests each are composed of 30 items representative of basic content areas and distributed across the first four GED levels.

The test taker selects each test item answer on the criterion-referenced tests by inserting the probe in the appropriate port. The tests are timed and scored by the computer, but are not unduly dependent on speed.

At the conclusion of an APTICOM testing session the test administrator can immediately obtain a computer print-out of the APTICOM Report, save the individual's test data to an IBM PC or compatible computer, or select from a variety of data entry and report options.

The five part APTICOM Report consists of the Aptitude Test Battery report, the Occupational Interest Inventory report, the Educational Skills Development report, the Vocational Recommendations report, and an Explanatory Legend. Each section of the report provides a clear and understandable analysis of the individual's performance accompanied by a concise narrative explanation of data and tables.

The Vocational Recommendations section, the most unique of the APTICOM reports, presents a list of job titles for which the test taker meets specific GED language and math requirements selected from the larger list of job titles which fit individual interest and occupational aptitude patterns. This cross-referenced or sifted-down report presents a limited list of sample job titles for consideration by the client.

A variety of other report options may be customized by the counselor to adapt to individual reporting and counseling needs. The APTICOM manuals provide useful guidance to the counselor for consideration of options such as reporting scores to reflect the standard error of measurement and excluding the General Educational Skills Battery results from the Vocational Recommendations report. Thus, the benefits of the rapid and accurate automated reports can be further customized by utilizing the flexibility and control available to the test administrator.

USE IN COUNSELING

The APTICOM may be found to be particularly useful for individuals who do not normally perform well in group testing situations or have experienced repeated frustration or anxiety in relation to paper-and-pencil tests. Quick individual administration and automated report options make APTICOM a very time efficient occupational testing and counseling tool.

With a price tag of over $6000, the biggest drawback to the APTICOM may be its cost, which limits its application to users with sufficient budgets. Once acquired, however, the APTICOM is very user friendly. APTICOM's publisher, Vocational Research Institute (VRI), has produced an instructional video to orient administrators. The manual, however, provides experienced evaluators with sufficient training for accurate administration.

The computer scores the test-taker's performance and correlates performance with DOL criteria for success in a wide variety of occupations. The results can be downloaded to an IBM computer or printed out directly from the APTICOM computer, ready to be used in counseling settings.

With proper training, non-certified assessment technicians could effectively administer the APTICOM and relay the print-outs to qualified counselors for interpretation to the clients. The APTICOM appears to have face validity with test-takers which facilitates the establishment of rapport.

TECHNICAL CONSIDERATIONS

The *APTICOM System Technical Manual* (Harris, Dansky & Zimmerman, 1985), while very thorough in most respects, fails to clarify the norming procedure for the Aptitude Test Battery. The manual does refer to the standardizing of the paper and pencil version used in development of the aptitude test and discusses the procedure for employing DOL standards to adjust upwards the percentile ranks of 9th and 10th grade subjects to adult percentile levels. These adult norms and adjustment options are included in the computerized aptitude report.

The Occupational Interest Inventory was standardized for high-school-aged students and adults in separate studies which resulted in "Prevocational" norms for those aged 18 or younger and "Vocational" norms for those aged 18 or older. Samples of adequate size in both norming studies represented geographic and ethnic diversity and gender balance. Both norm tables list male and female interest norms.

Because test-taker performance on the Educational Skills Development Battery (ESDB) is compared to criterion standards, norms were not developed for the ESDB battery.

The VRI's claims of reliability for the Aptitude Test Battery are based on moderate to high Pearson product-moment correlations based on test-retest (one-week interval) of a convenience sample of 67 trade school students. Lower reliability coefficients (.65–.74) were reported for the dexterity, coordination, and clerical perception aptitudes. These aptitudes yielded fairly high standard errors of measurement (10.2–11.8). Higher coefficients (.84–.89) were reported for the general, verbal, numerical, spatial, and form perception aptitudes. The standard error of measurement for these aptitudes ranged from 6.6 to 8.5. In his two reviews of APTICOM, Botterbusch (1987, 1988) cites surprisingly high reliability coefficients for the brief, highly speeded tests.

Internal consistency research completed by VRI on the Occupational Interest Inventory resulted in a mean alpha coefficient of .86 with a range of .80 to .90, which is relatively high for brief subtests with limited numbers of items. The *APTICOM Systems Technical Manual* (Harris, Dansky, & Zimmerman, 1985) presents a favorable comparison of these data with parallel USES-II data. The VRI's test-retest study produced moderately strong correlations with a mean reliability coefficient of .83 and a range of .74 to .86 which also compared favorably to those for USES-II.

The technical manual describes the process for development of the criterion-referenced Educational Skills Development Battery (ESDB), but presents no data or claims for reliability of the items or tests.

The VRI conducted construct validity research on the Aptitude Test battery in 1983 with a sample of 417 selected from eight convenient locations in the United States and Canada. The foundation for VRI's validity claims are based on this research which correlated the performance of the sample on the

APTICOM with that on the GATB. Higher correlations in the .60s and .80s were obtained in the general verbal numerical, spatial, form perception, and clerical perception aptitudes, while lower correlations were obtained on the motor coordination, finger dexterity, and manual dexterity aptitudes.

In an interesting factor analysis of GATB and APTICOM, the VRI discovered three underlying factors in APTICOM compared to two in GATB. Harris, Dansky, and Zimmerman (1985) presented these three factors as further evidence of the validity of the APTICOM for measuring distinct aptitudes.

As with the aptitude battery, VRI bases its claims for validity of the APTICOM Occupational Interest Inventory on its correspondence with DOL's USES-II. Research demonstrates moderately strong validity coefficients ranging from .70 to .85 with only two areas below .75.

The VRI bases its claim of content validity for the Educational Skills Development Battery on the rating by a panel of experts of the GED levels addressed by each item. A three-member panel rated the Language Skills Development test items while a two-member panel rated the Math Skills Development test items.

OVERALL CRITIQUE

Major strengths of the APTICOM are its quick and easy administration, its automated timing and scoring, its contribution to accuracy of administration and scoring and its face validity with test-takers. The reliability and validity are generally adequate for the aptitude and interest batteries although more research could and should be done. When interpreting aptitude scores, counselors should be aware of the lower reliability ranges and higher standard errors of measurement for the dexterity, coordination and clerical scales. Additional reliability research is needed on the Educational Skills Development Battery to make it useable with confidence.

The major weakness may be the temptation for schools and agencies to allow administration and interpretation by less qualified persons and relying too heavily on the computer printouts to serve as final recommendations. When using the APTICOM for students with special needs, the interpreter must be aware that the screening function of the ESDB scores and the academic-skill-dependent aptitude scales may result in a reduction in the number of job listings in the assessment report and a consequent underestimation of the individual's potential. However, this weakness would not be a fault of the publisher for the manuals do an admirable job of informing the user of appropriate reporting and interpretation procedures and options for accommodation of individual differences.

REFERENCES

Botterbusch, K. F. (1987). *Vocational assessment and evaluation systems: A comparison.* Menomonie, WI: Materials Development Center.

Botterbusch, K. F. (1988). Review of APTICOM. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to career assessment instruments* (2nd ed.) (pp. 198–202). Alexandria, VA: National Career Development Association.

Evans, L. (1986, December). *A survey regarding placement and performance of students receiving vocational evaluation in the Region V Vocational Evaluation Center.* Paper presented at Special Needs Division of the American Vocational Association Convention, Dallas, TX.

Green County School Systems. (1986). *APTICOM assessment, Greenville city*. Greenville, TN: Author.

Harris, J. A., & Danski, H. (1991). *APTICOM: Operation and scoring manual*. Philadelphia: Vocational Research Institute.

Harris, J. A., Danski, H., & Zimmerman, B. (1985). *APTICOM: System technical manual*. Philadelphia: Vocational Research Institute.

Armed Services Vocational Aptitude Battery (ASVAB) Career Exploration Program

Department of Defense

Department of Defense
Defense Manpower Data Center
Personnel Testing Division
99 Pacific Street, Suite 155A
Monterey, CA 93940

Target Population: Students in grades 10, 11, 12, and postsecondary school.

Statement of the Purpose of the Instrument: The ASVAB Career Exploration Program includes the Armed Services Vocational Aptitude Battery, the Self-Directed Search (published by PAR), and exercises that assist students in identifying their personal preferences (including work values). The purpose of the program is to provide information to students on their abilities, interests, and personal preferences; help them organize that information; and then use that information to identify civilian and military occupations that have characteristics consistent with their own. References to more extensive information on the occupations are provided in an interpretive workbook so that students can make informed career decisions. In fact, students are provided page numbers where occupations are described in the Department of Defense's document called *Military Careers* and the Department of Labor's *Occupational Outlook Handbook*. Through a structured exercise, students can take additional steps to explore further the occupations identified as possible matches.

Titles of Subtests, Scales, Scores Provided: Three academic composites are provided. They are Academic Ability, Verbal Ability, and Math Ability. In addition, scores on all 10 subtests in the ASVAB are reported. These include Word Knowledge, Paragraph Comprehension, Arithmetic Reasoning, Mathematics Knowledge, General Science, Auto & Shop Information, Mechanical Comprehension, Electronics Information, Numerical Operations, and Coding Speed. Two career exploration scores are reported to the student. They are the ASVAB Code and the Military Careers Score. Using the student workbook, students are also able to determine their dominant interest areas according to the Holland RIASEC typology. Valid ASVAB test scores can be used for military selection and classification.

Forms and Levels Available, with Dates of Publication/Revision of Each: Forms 18 and 19 of the ASVAB became available in 1992. A revision of the interest inventory is planned for 1995. The next revision of the test battery and the program is anticipated for 1997.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: The following documents became available in 1992: *ASVAB 18/19 Student and Parent Guide, ASVAB 18/19 Educator and*

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Counselor Guide, *ASVAB 18/19 Counselor Manual*, *Exploring Careers: The ASVAB Workbook*, and *Military Careers*, a career information resource. The *ASVAB Technical Manual* was finalized in 1993.

Languages in Which Available: English.

Time: Actual Test Time: 2.5 hours (ASVAB only).
Total Administration Time: 3 hours (ASVAB only). The remainder of the program is self-paced.

Norm Group(s) on Which Scores Are Based: Norms on the ASVAB were developed based on data collected on a nationally representative sample of 16–23-year-olds selected by the National Opinion Research Center as part of the National Longitudinal Survey of Youth Labor Force Behavior. Based on these data, grade, and gender norms were developed for students in grades 10, 11, 12, and postsecondary schools.

Manner in Which Results Are Reported for Individuals

Types of Scores: After machine scoring, students receive same grade/same sex percentiles and percentile banks, and same grade/opposite sex percentiles. These are provided for each of the three academic composites and for the 10 ASVAB subtests. In addition, two career exploration scores are provided. Counselors receive a results sheet that contains all the scores provided to the student with the addition of same grade/combined sex percentiles.

Schools also receive the ASVAB Test Score Student Alpha Roster which presents scores of all students alphabetically by grade. The Roster includes same grade standard scores for all composites and tests; and percentile scores for same grade/same sex, same grade/opposite sex, same grade/combined sex, and for an 18–23-year-old reference group.

Report Format/Content for Group Summaries

Options: For each session with five or more students testing in the same grade, schools receive a one-page Grade Statistical Report which provides means and standard deviations of the same grade standard composite and subtest scores, along with median scores and semi-interquartile ranges of the same grade/combined sex percentile scores. This information is provided to enable counselors to develop local norms and to compare students' scores to those of others in the school.

Scoring

Machine Scoring Service: The ASVAB is a secure test administered by trained government personnel. Answer sheets are completed by the student and brought to one of 68 scoring sites throughout the United States. The student's interest codes are obtained by the self-administration and self-scoring of the interest inventory which is contained in the student workbook. Results are typically returned to the schools in about two weeks.

Hand-Scoring: Not available.

Local Machine Scoring: Not available.

Computer Software Options Available: Not available yet.

Cost of Materials: No cost to schools for materials or scoring.

Additional Comments of Interest to Users:

(a) It is anticipated that a computer software program will be available to schools by early 1994. This program will allow students to search through the listing of more than 200 civilian and military occupations using their ASVAB scores, interest codes, and personal preferences.

(b) ASVAB scores have been incorporated into the search strategies of 18 Career Information Delivery Systems (CIDS) produced by states, consortia and commercial publishers. Students are able to input their ASVAB percentiles and the computer will match up that information to aptitude characteristics in the CIDS occupational databases.

(c) Local education specialists are available to organize test administration sessions, conduct test interpretation classes with students, and hold training workshops for teachers, administrators, and counselors.

(d) The *ASVAB 18/19 Counselor Manual* was developed with the assistance of the American Counseling Association.

(e) A short practice test is provided in the *ASVAB 18/19 Student and Parent Guide* to familiarize students with the subtests making up the ASVAB and the format of the items.

Published Reviews:

Murphy, K. (1984). Review of the Armed Services Vocational Aptitude Battery. In D. J. Keyser & R. C. Sweetland (Eds.), *Test Critiques*. Kansas City, MO: Test Corporation of America.

Jensen, A. (1985). Review of the Armed Services Vocational Aptitude Battery, test reviews. *Measurement and Evaluation in Counseling and Development, 18*, 32–27.

Jensen, A. R. (1988). Review of the Armed Services Vocational Aptitude Battery (ASVAB). In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to career assessment instruments*, (*2nd ed.*). Alexandria, VA: National Career Development Association.

NOTE: The review that follows is the first that reflects the Career Exploration Program. Listed reviews are for previous editions.

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Professor

Richard W. Bradley
Professor

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Southern Illinois University at Carbondale

DESCRIPTION

Just what is the ASVAB Career Exploration Program? In total, this program is something old, something borrowed, and something new which come together in *Exploring Careers: The ASVAB Workbook*. The workbook is a means for high school students to match assessed aptitudes (something old) and interests (something borrowed) with work values and career information (something new). The end product of this trait-factor matching should be informed career decision making.

The ultimate question is: Does this program work? Unfortunately, there is no absolute answer to this question. What this review can provide readers are some historical and technical considerations of factors incorporated into the program. The review will almost exclusively be limited to the aptitude assessment component of the program. No attempt will be made to review the interest component (the Self-Directed Search) which is reviewed elsewhere in this Guide. Brief comments will be included concerning the values component and the matching system called the OCCU-FIND.

The ASVAB 18/19 reflects the evolution of aptitude assessment through the twentieth century. The Army Alpha, the first written objective intelligence test and the ancestor of all subsequent aptitude tests (Hanson, 1993, p. 211), was developed during World War I by the military to make decisions about effective use of manpower. During World War II each military service greatly expanded the use of tests to screen, classify, and assign recruits. Subsequent to World War II, there were mandates to develop standardized screening tests for enlistment qualifications. Each service developed its own tests until finally in 1968 the Department of Defense (DoD) developed an instrument used across all Armed Services, ASVAB Form 1.

A large number of subsequent forms have been developed. The newest, ASVAB Forms 18a, 18b, 19a, and 19b, are administered in public schools whereas Forms 20, 21, and 22 are presently used in the Enlistment Testing Program. All contemporary ASVAB forms were designed to be parallel to reference Form 8a, published and normed in 1980.

All ASVAB forms consist of 10 multiple choice tests, eight power tests that allow maximum performance with generous time limits, and two speeded tests. The content areas, number of items, and test times for the eight power tests are as follows: General Science, 25 items, 11 minutes; Arithmetic Reasoning, 30 items, 36 minutes; Word Knowledge, 35 items, 11 minutes; Paragraph Comprehension, 15 items, 13 minutes; Auto and Shop Information, 25 items, 11 minutes; Mathematics Knowledge, 25 items, 24 minutes; Mechanical Comprehension, 25 items, 19 minutes; and Electronics Information, 20 items, 9 minutes. The two speeded tests are Numerical Operations, which involves up to 50 computations in 3 minutes, and Coding Speed, which includes 84 items in 7 minutes. In all there are 334 items with total testing time of 144 minutes; however, a total time block of three hours is recommended to administer all 10 tests.

Since the ASVAB is available without charge to public school 10th through 12th grade students, and is administered as part of normal processing of military applicants, it is the most widely used multiple aptitude test in the United States. The DoD is the second largest training agency in the United States, after public schools, and it utilizes only the ASVAB. Like the 1917 Army Alpha, the ASVAB is used to make military enlistment decisions. The purpose is to predict how well individuals will perform in military programs, whereas the ASVAB Career Exploration Program has broader goals.

USE IN COUNSELING

By themselves, broad spectrum general aptitude test batteries don't provide much useful information in counseling. It is like using an achievement test for career prediction. Some will say aptitude is different. However, the General Science, Automotive and Shop Information, and Electronic Information tests were developed using current texts for school instruction in those courses. The score a person receives on one of those tests probably reflects past experiences with the content more than aptitude. Jensen (1988) suggested counselors may overinterpret individual scores on the profile and stated that "Occupational choice should be thought of more in terms of general ability plus interests than in terms of differential aptitudes . . . ." (p. 62).

Individual subscale scores are not used for the aptitude matching portion of the OCCU-FIND. Only a single number one through five is used as the Primary or Secondary ASVAB Code to convey general academic ability. ASVAB Codes 1, 2 and 3 indicate degrees of performance above the median (the 50th percentile) and ASVAB Codes 4 and 5 represent performance below the median. The Academic Ability Composite is a combination of the Verbal Ability Composite (the sum of Word Knowledge and Paragraph Comprehension) and the Math Ability Composite (the sum of Arithmetic Reasoning and Mathematics Knowledge). In other words, only a general ability factor is utilized in the overall occupational matching matrix.

The four ASVAB tests, which comprise the Academic Ability Composite, plus the Mechanical Comprehension and Electronics Information scores are combined to provide a Military Careers Score. This score is used with graphs in the *Military Careers* manual to show the probability of qualifying for one or more specialties within an occupational cluster. The *Military Careers* manual is quite similar to the Department of Labor's *Occupational Outlook Handbook*. All 10 test scores and three composite scores (Verbal, Mathematics, and Academic Ability) are reported using percentile bands on the profile sheet. However, the Military Careers Score, perhaps the most meaningful score for someone considering a military career, is presented as a three-digit score ranging from 140 to 240 without any percentile rank provided.

The Career Exploration Program combines the ASVAB 18/19 Academic Ability Composite with the Self-Directed Search and a values checklist to form the OCCU-FIND. Is this product an improvement over just the aptitude test? Without a doubt the Career Exploration Program is superior to using the ASVAB alone for counseling purposes. Usually students complete *Exploring Careers: The ASVAB Workbook* at their own pace without counselor assistance. The logic behind the workbook content appears excellent and the readability/self-pacing appropriate. It is a well-conceived, professionally illustrated sequence of activities which should hold an adolescent's attention. A computerized OCCU-FIND will be available in 1994.

TECHNICAL CONSIDERATIONS

The *ASVAB 18/19 Counselor Manual* includes chapters describing the administration, technical characteristics, and interpretation of the ASVAB and introducing the Career Exploration Program which includes the Self-Directed Search. There is a separate chapter on *Exploring Careers: The ASVAB Workbook* and supplementary activities for the counselor to use with high school students to enhance their understanding of career interests and aptitudes. The *ASVAB 18/19 Counselor Manual* is an excellent publication which covers the material well.

Review of the technical characteristics of the ASVAB will include a discussion of parallelism, norms, reliability, validity, test bias and differential prediction.

The four ASVAB 18/19 forms were designed to be parallel to the reference Form 8a. Extensive research has been conducted by the Defense Manpower Data Center to equate new forms to the reference form; therefore, scores on all forms developed since the reference form have the same interpretation as scores on the reference form.

An individual's ASVAB performance is referenced to a stratified sample of approximately 12,000 women and men aged 16–23 who took the ASVAB Form 8a between July and October of 1980, commonly referred to as the *Profile of American Youth*. The ASVAB results are reported as percentile scores which should be labeled percentile ranks.

The ASVAB Student Results Sheet and Counselor Summary include the percentile ranks for the three composites (Academic, Verbal, and Math Ability) and the 10 subscales with bands for same grade/same sex norms. Percentile ranks without bands are provided using same grade/opposite sex norms and only the counselor receives percentile ranks based on same grade/combined sex norms.

The Counselor's Manual reports internal consistency reliability estimates for males and females at four grade levels (10th, 11th, 12th, and postsecondary) for the three composites (Academic, Verbal, and Math Ability) which range from .92 to .96 and eight of the 10 tests which range from .71 to .92. Alternate-form reliability for the same groups for the two speeded tests (Numerical Operations and Coding Speed) ranges from .77 to .85. The report by Welsh, Kucinkas, and Curran (1990) summarizes test-retest reliability for earlier forms. All indices were similar to those reported in the Counselor's Manual. Overall, there appears to be strong evidence for the reliability of ASVAB aptitude scores.

Predictive validity (whether the ASVAB accurately predicts success in future civilian and military occupations) is extremely important. Results from empirical studies show that ASVAB composites correlate with: (a) entry-level final technical school grades of enlisted personnel between .55 and .60, (b) job performance in military occupations between .35 and .47, and (c) supervisors' ratings in civilian occupations between .30 and .50. These are at best moderate validity coefficients, but they are about as high as any test scores used as predictors.

The Welsh, Kucinkas, and Curran (1990) report summarizes content and construct validity studies as well as the criterion-related validity studies reported in the Counselor's Manual. They conclude that the ASVAB has content validity based on the test construction methodology and factor analysis. Evidence of construct validity includes: (a) statistically significant positive relationships with equivalent subtests of other multiple-aptitude batteries, and (b) the same factor pattern for and relationships among ASVAB tests for various forms of the ASVAB.

A number of studies referenced in the Counselor's Manual indicate that no major sex or race differences have been found in predictions based upon ASVAB scores. Conclusions based on these studies indicate that the ASVAB is not biased in selection favoring Whites to Blacks or men to women. However, a recent study conducted by Prediger and Swaney (1992, p. 29) reported that 45% of Whites, 80% of Hispanics, and 86% of Blacks score below the median on the ASVAB and are assigned an ASVAB Primary Code of 4 or 5. Reasons for this disparity should be a concern for school counselors.

OVERALL CRITIQUE

The ASVAB Career Exploration Program is composed of three components: ASVAB 18/19 to assess aptitudes, the Self-Directed Search for interest assessment, and the OCCU-FIND for matching work values and career information with the assessed aptitudes and interests.

This review has focused primarily on only one of the parts, ASVAB 18/19, the aptitude assessment portion. In general, we find the ASVAB 18/19 to be an excellent example of the state of aptitude testing at the end of the 20th Century. The instrument's psychometric qualities have been studied extensively by the Department of Defense for its use as a predictive tool.

The second portion of the ASVAB Career Exploration Program, the Self-Directed Search, has a positive history as a career exploration tool. How the exploration value of the Self-Directed Search is increased by being combined with predictive aptitude results, ASVAB 18/19 scores, has yet to be justified.

The third component of the program, the OCCU-FIND, is an elaborate trait-factor matching scheme which brings together measured aptitudes with self-reported interests, career information, and work values. This review began by asking if such a combined program actually works. Since 80% of Hispanics and 86% of Blacks are assigned an ASVAB Primary Code of 4 or 5 according to Prediger and Swaney (1992), without counselor intervention 4 out of 5 of these students would only explore careers that match with ASVAB Primary Codes of 3, 4, or 5. Therefore, counselors should be sensitive about using the ASVAB Career Exploration Program with Black and Hispanic students and should interpret their ASVAB scores with caution until more definitive evidence is available.

We recommend the ASVAB 18/19 and the exploration program for everyone considering joining the military within two years since it is a screening/application requirement for the military analogous to a college admission examination. The free cost to students is a plus, and we recommend it for those who wish to avail themselves of a free career exploration program. However, until more studies of the ASVAB Career Exploration Program are completed, we would not recommend it for all high school students.

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Career Assessment Program (ABCD/IBCD)

Educational Technologies, Inc. and The Ball Foundation

Educational Technologies, Inc.
1007 Whitehead Road Extension
Trenton, NJ 08638

Target Population: Aptitude Based Career Decision (ABCD) portion—8th grade and above most populations except low level special education. Interest Based Career Decision (IBCD) portion—all populations 6th grade and above.

Statement of the Purpose of the Instrument: The Career Assessment Program is designed to assess an individual's aptitude and interest and deliver probability for success in 66 work groups. The program also matches the client to local training and/or vocational programs. The ABCD (aptitude) portion has been approved as an Ability to Benefit exam that predicts the client's probability for success in 1 year, 2-year, 4-year, and post graduate programs. An At Risk profile is provided for clients who have a low probability for success in 1-year programs.

Titles of Subtests, Scales, Scores Provided: ABCD (7 subtests) including Numerical Reasoning, Analytical Reasoning, Inductive Reasoning, Numerical Computation, Spatial Visualization, Vocabulary, and Clerical Perception. IBCD scores are reported on 20 dimensions of work based on an approach-avoidance pattern for each activity. The Career Assessment Program provides test profile with scores ranked high, medium or low and recommendations made to 66 occupational families in the G.O.E.

Forms and Levels Available, with Dates of Publication/Revision of Each: ABCD Paper/Pencil format (1986), IBCD Paper/Pencil format (1988), Computerized Career Assessment (1991). Latest Career Assessment Program revision (September 1992).

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: ABCD (1986), IBCD (1988), Career Assessment (1992).

Languages in Which Available: English and Spanish.

Time: Actual Test Time: ABCD (1 hour & 40 minutes), IBCD (30–45 minutes—not timed).
Total Administration Time: 2 - 2 1/2 hours.

Manner in Which Results Are Reported for Individuals

Types of Scores: Raw scores, standard scores, and percentile rank.

Report Format/Content

Basic Service: Reports include test profiles (graphs) which indicate areas of high, medium or low aptitude and approach/avoidance scores for the interest portion. Reports also include

matches to occupational families (work groups), G.O.E. codes, and match scores. Recommendations are made for occupational families & local training programs.
Options: Two page summary report available.

Report Format/Content for Group Summaries: Not available.

Machine Scoring Service

Cost of basic service per counselee: ABCD—Test Booklets $8.00 each; Response form $2.25 each; Processing software $995.00. IBCD—Survey books $20.00 each; Response form $2.25 each; Processing software $995.00.

Cost of Options: Computerized Career Assessment Program—ABCD $2950.00; IBCD $2,700.00.

Hand-Scoring: Not available.

Local Machine Scoring:

Provisions/conditions/equipment required: Paper/pencil administration requires one of the following for scoring: Card Reader (Chatsworth or True Data) or a scanner (NCS 3000). For Career Assessment software, an Epson printer or compatible is required.

Computer Software Options Available: Standard administration on-line. Complete testing & scoring can be done via computer.

Ways in which computer version differs: IBCD visuals are different than those in the Survey Book used in the paper/pencil administration. Also, IBCD pictures in computerized version are not colorized.

Cost of Materials

Specimen Set: Available for $15.00 (either ABCD or IBCD)—Allows for 3 individuals to be tested.

Counselee Materials: ABCD Test Booklets $8.00 (reusable). IBCD Survey Books $20.00 (reusable). ABCD & IBCD response forms $2.25 (not reusable).

Additional Comments of Interest to Users: Updated manual and new packaging available Fall 1992; ABCD portion of test is ATB approved.

Published Reviews:

Benson, P. G. (1985). Review of the Ball Aptitude Battery. In J. V. Mitchell, Jr. (Ed.), *Ninth mental measurements yearbook.* Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

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Reviewed By

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APTITUDE BASED CAREER DECISION (ABCD)

Description

The Career Assessment Program is composed of two complementary assessments, the Aptitude Based Career Decision test (ABCD; Ball Foundation, 1986) and the Interest Based Career Decision test (IBCD; PREP, Educational Technologies, 1986). "Aptitude" for ABCD is defined as the potential to learn occupational skills. Hence, the goal of ABCD is to assist individuals in discovering occupations for which they possess requisite aptitudes for successful performance in training programs as well as in the work itself. The ABCD consists of seven timed tests measuring seven primary abilities selected from 16 dimensions of the Ball Aptitude Battery (BAB) (Ball Foundation, 1975). The seven tests include: Clerical perception (240 items, 5 minutes), seeing and differentiating pairs of numbers; Vocabulary (80 items, 22 minutes), identifying synonyms in a 5-choice multiple choice test format; Numerical Computation (20 items, 17 minutes), adding, subtracting, and reducing fractions; Numerical Reasoning (20 items, 22 minutes), finding patterns in series of numbers and solving numerical problems; Spatial Visualization (24 items, 12 minutes), imagining where holes are when a piece of paper is folded, punched and unfolded in a two- and three-dimensional space; Inductive Reasoning (30 items, 13 minutes), finding common elements in a series of pictures in which three of six pictures are related according to some principle; and Analytical Reasoning (18 items, 13 minutes) identifying relationships among words and organizing them in a logical order of progression. According to the *Administrator's Manual* (Goldman, Dong, Sung, & Pong, 1986), the seven tests are arranged in order of increasing complexity and the entire battery of seven tests takes approximately two hours to administer. The ABCD can be administered individually, in groups, or on-line through a PC.

The student report consists of three principal sections: (a) Test Profile with raw scores, standard scores, standard error, and percentile ranks; (b) Occupational Aptitude Profile listing 66 occupational families rated in terms of High, Medium, and Low potential for success; and (c) Specific Recommendations regarding the highest rated occupational families. Each recommendation provides information about activities, typical educational level, three to six representative job titles with *Dictionary of Occupational Titles* (DOT) codes, and an estimated outlook in terms of growth and employment opportunity at the national level for each title.

Use in Counseling

According to the *Counselor's Manual* (Sung, Dawis, Dong, & Goldman, 1986), the ABCD is intended to help individuals discover potential occupations for which they possess requisite aptitude to learn and perform job skills as well as to eliminate unlikely or inappropriate alternatives. The instrument may also be used in human resource development through its application in personnel selection and in charting career paths within organizations.

The ABCD should be used by individuals 16 years of age or older. Some of the more auspicious settings and populations would appear to include group-based career courses for high school juniors and seniors, orientation sessions for entering students in community colleges and trade and technical schools, and orientation sessions for entry-level workers in large corporations. The strength of the ABCD is that it relates individual aptitudes to a wide range of occupations including semi-skilled, skilled, and professional occupations.

Technical Considerations

According to tables presented in the *Technical Manual* (Dong, Sung, Goldman, & Dawis, 1986), with the exception of the Inductive Reasoning Scale, the scales appear to have good item statistics (i.e., normality of distribution, item difficulty dispersion, and item-total correlation). An inspection of the correlation matrices suggests that the scales are factorially independent. Median intercorrelations range among several studies from r = .10 to .19. A factor analysis of the initial 16 BAB scales from which the seven ABCD factors were drawn suggested that six of the seven scales, with the exception of Clerical Perception, are somewhat influenced by a general intelligence factor.

Norms are based on a stratified-random sampling procedure resulting in 100 high school seniors for each of six cells of a 3 × 2 matrix with Black, White, and Hispanic crossed by Male and Female. Each cell contains 1/3 high, 1/3 middle, and 1/3 low SES. Thus, standardization is based on equal representation rather than proportionate representation. Members of the norm group were drawn from 32 public and private high schools in Illinois and Texas. Conversion tables are available in the *Technical Manual* for gender and varying age groups: 18 and under, 19–25, 26–35, and 36–64.

Split-half internal consistency coefficients range from .71 for Inductive Reasoning to .98 for Vocabulary. Six-week stability coefficients range from .71 to .98, whereas a 4-year interval range was reported in the *Technical Manual* to be .39 to .88. With respect to test fairness, while there were significant gender and ethnic group differences in the respective dimensions, the developers claim no practical differences among groups with respect to the prediction of high school grades, regression slopes, and item discriminations.

Concurrent validity coefficients correlating ABCD factors with the Comprehensive Ability Battery and the Differential Aptitude Test indicate there is strong convergent validity for the Clerical, Vocabulary, and Spatial abilities scales, but less so for Inductive and Analytical Reasoning. Numerical Computation and Numerical Reasoning scales were not reported. In a regression study, the ABCD scales also predicted 39 levels of cognitive complexity of the GATB, with an 88% "hit rate." Criterion-related validity coefficients included a multiple R = .54 regressing high school grades on ABCD scales; and zero-order r's = .00 to .19 for carpenter training grades, .19 to .48 for horticulture training grades, −.17

to .48 for CPA supervisor ratings, −.03 to −.22 for school teacher supervisor ratings, and −.24 to .25 for teacher salaries. An inspection of the many tables and coefficients suggests that the ABCD predicts training grades better than job performance ratings.

Computer-Based version

Since the computer version was developed recently (1992), there are no research studies reported on the equivalency of the two forms. Nevertheless, students familiar with PCs may well prefer taking the computer version over the paper-and-pencil version. The Clerical Accuracy test may well comprise a different test from the paper and pencil version since it involves a slightly different eye-hand coordination activity activity using the keyboard as opposed to recording matches on a scan-form answer sheet. The computer version seems to be virtually self-administering once the log-on procedures are complete.

Overall Critique

The strength of the ABCD lies in the derivation of estimates of success in a wide variety of families of occupations with a minimal amount of testing time and expense. It is also easily administered and scored and can be used effectively in group counseling situations. The reports can be read by students with the assistance of a career counselor.

The "lynch pin" of the ABCD is its ability to predict the 39 levels of cognitive complexity as measured by the GATB, from which estimates of success in 66 occupation families are derived. Thus, the ABCD is in effect a GATB "locator." While the ABCD is fairly well associated with GATB occupational cognitive complexity scores, the test of whether the ABCD is an accurate predictor of occupational success is therefore ultimately linked to the predictability of the GATB (U. S. Department of Labor, 1983). Nevertheless, one must be aware of the great leaps of inference one takes beginning with seven ABCD scores derived from 432 items, moving to 39 levels of GATB job cognitive complexity estimates, on to high, medium and low ability estimates of 66 occupational families, then on to training performance, and ultimately on to job performance and satisfaction. The pathway of prediction involves the introduction of error at each step along the way. Hence, any predictions of training performance or occupational success based on ABCD scores should be confirmed with additional evidence from related abilities tests, course grades, and work history.

INTEREST BASED CAREER DECISION (IBCD)

Description

The purpose of the IBCD is to match interest scores on 20 dimensions of work to the same 66 occupational families included in the ABCD. The 20 dimensions of work are grouped according to Things (8 dimensions), People (5 dimensions), and Data (7 dimensions). The *Survey Booklet* contains 200 items with a verbal statement of a job task and a picture of an individual performing the task. Every statement contains a verb and an object, for example, "Apply principles to the design of equipment." or " Calculate total costs." The picture is designed to augment the verbal statement so as to reduce the required reading level. The test taker responds to each item on a 4-point scale: Dislike very much, Slightly dislike, Slightly like, Like very much. Each dimension contains 10 items and the test takes approximately 25 minutes to complete. An audio-visual version of the instrument is available for special populations requiring 45 minutes to administer. Test takers record their responses on a QuickScore Response Card which can be scanned locally on an NCS 3000 scanner or it can be sent to PREP Division of Educational Technologies, Inc., for scoring.

The IBCD Report contains: (a) an interest profile in which each of the 20 dimensions is rated according to "Avoid," "Neutral" or "Approach;" (b) an interest match to 11 *Guide to Occupational Exploration* (GOE) interest areas noting a ratio of the number of actual matches with occupational families in each area to the total number of families in the area; (c) an occupational interest profile in which 66 occupational families are listed in alphabetical order and rated according to *H*igh, *M*edium, or *L*ow match scores; and (d) recommendations for the two highest occupational families. Each recommendation includes the GOE code, representative activities, typical education level, six job titles with DOT codes, and outlook in terms of growth and opportunity (i.e., competition for available job openings).

Use in Counseling

The IBCD may be used individually or in groups for school guidance, beginning with the ninth grade. It may also be used in career counseling with displaced workers or those seeking retraining or the upgrading of job skills. The use of pictures to augment the verbal stimuli may be particularly helpful with individuals with limited reading proficiency. The IBCD matches 20 dimensions of interest to the same 66 work groups, as do the seven aptitudes of the ABCD. Thus, the ABCD/IBCD combination can be used as a complementary set of instruments to enhance career exploration.

Technical Considerations

The IBCD is based on two fundamental assumptions: (a) occupational preference is associated with the liking or disliking of activities associated with jobs, and (b) likes and dislikes for activities can be used to predict the liking of jobs involving those activities. A job analysis of 57 entry-level, semi- or low-skilled jobs in 29 Indianapolis companies gave rise to 5,900 behavioral units. A content analysis yielded 575 discrete behavioral units distributed among 16 categories. The development of items within these categories became the progenitor of the IBCD, the Job Match II System (Cleff, 1977). Through subsequent development, four more dimensions were added to encompass a range of occupations that includes semi-skilled, skilled, technical, managerial, clerical and sales, and managerial. While a statement in the *IBCD Instructor's Manual* (PREP, 1989) alludes to the independence of sales, neither the intercorrelation matrix nor a factor structure are reported to provide some indication of the degree of independence or underlying structure among the 20 work dimensions. Additionally, the statistical model used to relate scores on the 20 dimensions to the 66 occupational families is only superficially described. As a result, this reviewer is unable to comment on the validity of the matching procedure.

Internal consistency coefficients for an earlier version of the IBCD were reported to range from .62 to .97. Test-retest coefficients for 1–4 weeks for three studies resulted in median coefficients of .75 to .79 with a range from .53 to .93 with approximately half of the coefficients .80 or greater. Eighteen scales were used in these studies. A correlation of .94 between the paper and pencil version and the audio-visual version is reported.

Criterion validity was demonstrated for the job match index for keypunch operators, public utility employees, bank tellers and machine operators, insurance company clerk typists, telephone installers and repairers, hotel workers, nurses' aides, and supermarket store clerks. Criteria included training instructor grades, supervisor ratings, and longevity. The research studies and methods used to establish criterion validity were not presented. The studies in the *Instructor's Manual* were performed by the development team and there is no evidence that any of the reliability and validity studies appeared in refereed journals. There is no information reported about the reliability or validity of the IBCD itself, only its predecessors. Thus, one must accept on faith that the IBCD possesses similar psychometric characteristics to the earlier versions.

Computer-Based Version

The computer version of the IBCD possesses considerable potential for making a very unique contribution to interest assessment with its use of pictures to embellish the stimulus. The images using computer graphics on an IBM PC were, in the main, quite discernible. Research should be conducted to ascertain whether the PC version of the IBCD is indeed a parallel form of the print and audio-visual forms. The possibility of gender bias in the graphics should also be investigated.

Overall Critique

The strength of the IBCD lies in the compelling nature of deriving estimates of job interest matches for 66 occupational fields from responses to 200 statements of job behavior answered by clients in approximately 25 minutes. The report is attractively presented and can be interpreted with the assistance of a career counselor. The results would appear to be useful to both college and non college-bound individuals, the latter in particular. The principal limitations lie in the borderline reliability estimates of many of the scales, and the lack of documentation of construct and predictive validity of scores. The method used to derive matching scores to the 66 occupational families of the IBCD is undocumented and thus the validity of High, Medium and Low match scores must be accepted with caution. Concurrent validity studies correlating the 20 IBCD dimensions and occupational predictors with other published interest measures would be informative.

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U. S. Department of Labor-Employment Service (1983). *Test validation for 12,000 jobs: An application of job classification and validity generalization analysis to the General Aptitude Test Battery* (USES Test Report No. 45). Washington, DC: Author.

Career Survey

Interest—Ohio Department of Education;
Ability—John Wick, Jeff Smith, Donald Beggs and John T. Mouw

American College Testing (ACT)
2201 North Dodge Street, P.O. Box 168
Iowa City, IA 52243

Target Population: Grades 7–12 and Adult.

Statement of the Purpose of the Instrument: The instrument provides students, clients, and their counselors with information that will stimulate the counseling process, encourage the exploration of career areas that may not have ben previously considered, and provide a means for relating long-range career plans to short-range educational decision.

Titles of Subtests, Scales, Scores Provided: Interest scales include: Accommodating/Entertaining; Humanitarian/Caretaking; Plant/Animal Caretaking; Mechanical; Business Detail. Scales: Numerical; Communication/Promotion; Science/Technology; Artistic Expression; Educational/Social; and Medical. Ability scales include: Verbal and Nonverbal.

Forms and Levels Available, with Dates of Publication/Revision of Each: There is a regular form published in 1984 and a vocational-technical planning booklet published in 1988.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: Career Survey Counselor's Guide Prepublication Edition, copyright 1992.

Languages in Which Available: English.

Time: Actual Test Time: 20–25 minutes, interest survey; 24 minutes, ability survey.
Total Administration Time: 74 minutes.

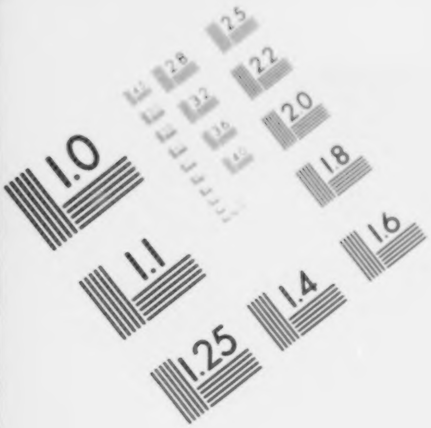
Norm Group(s) on Which Scores Are Based: Interest: Both same sex and combined sex norms are available for grades 7–8, 9–10, and 11–12. Ability: Grade level norms are available for grades 7, 8, 9, 10, 11, and 12.

Manner in Which Results Are Reported for Individuals

Types of Scores: Interest: Same sex and combined sex percentile ranks by grade level group (7–8, 9–10, 11–12). Ability: Grade level percentile rank, plus estimated ACT Composite, SAT Composite, and GATB-G score.

Report Format/Content

Basic Service: Career Profile (2 copies for each student) including percentile ranks for 12 interest scales and the 2 ability scales; estimated ACT, SAT, and GATB-G. Includes narrative reporting.
Options: Label and Educational Planning Report highlighting for each client areas of study that may relate to current interests.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AIIM

Association for Information and Image Management

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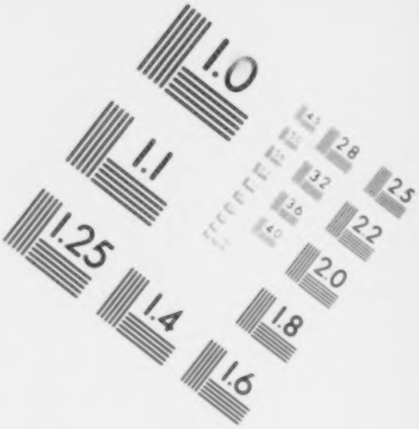
Silver Spring, Maryland 20910
301/587-8202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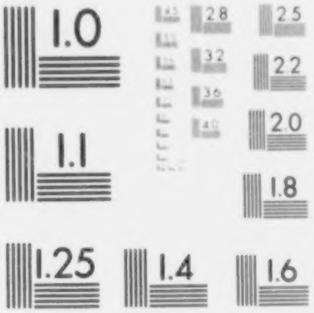
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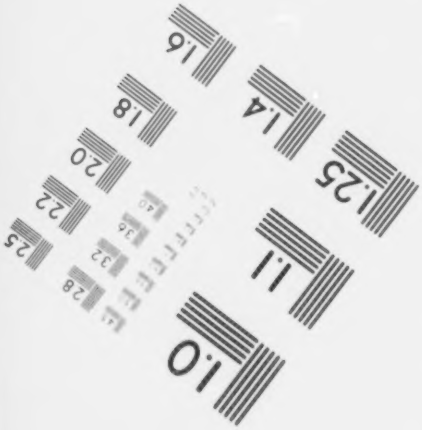
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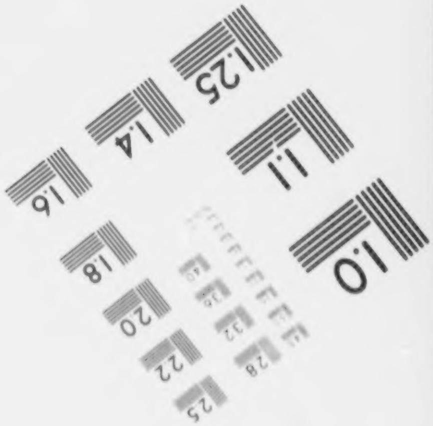
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MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

Report Format/Content for Group Summaries

Basic Service: Counselor's List Report provides a summary of scores for each student/client including same sex and combined sex percentile ranks, average item response (interest only) and consistency with which client answered interest items.

Options: Group Guidance Report—groups students of like interests for possible small group career exploration activities.

Scoring

Machine Scoring Service

Cost of basic service per counselee: $1.85/student, for more than 25 students/clients. Higher cost for lower total number of students.

Cost of Options: Label, $.32; Group Guidance Report, $.45; Educational Planning Report, $.70; Extra Career Profile, $.65; Research Tape, $65 per reel plus $.26 per student.

Time required for scoring and returning: 15-day guaranteed turnaround.

Hand-Scoring

Scored by: counselor.

Time required for scoring: 10–15 minutes per student/client.

Local Machine Scoring: Not available.

Computer Software Options Available: Not available.

Cost of Materials

Specimen Set: Career Survey Test Review Kit, $19; Career Survey-Vocational Test Review Kit, $19.

Counselee Materials: Career Survey Booklet (includes interests and abilities) plus 1 Directions for Admin. (per 35), $37.50; Ohio Career Interest Survey Booklet plus 1 Directions for Admin. (per 35), $34.00 (both of the above are reusable). Machine-scorable answer sheets (per 35), $28.85 (includes 35 Career Planning Booklets); Career Planning Booklet (per 35), $8.00; Career Survey Orientation Booklet (per 35), $5.00; Vocational Orientation Booklet (per 35), $5.00; Vocational Career Planning Booklet (per 35), $6.00.

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Reviewed By

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DESCRIPTION

The Career Survey (CS), according to its authors, is designed to "help students and young adults explore jobs and the world of work." The CS is made up of three parts: Part 1 is the Ohio Career Interest Survey and consists of 132 items each describing a work activity (e.g., "plant trees to restore a forest," "wash and dry hair," "examine the eyes for disease") to which respondents indicate how well they like that activity using a five point scale from "like very much" to "dislike very much." This part is also available as a single booklet, for separate administration. Part 2 is the Career Planning Survey, and consists of seven multiple choice questions where respondents indicate what kind of job tasks they like and what the person's plans are for further education. Finally, part 3 is the Career Ability Survey, which contains 40 items that are intended to measure a person's "reasoning ability with words, numbers and figures." This is a timed test that looks suspiciously like an intelligence test with analogies items, mathematical series items, and visual matching items, purported to measure verbal and nonverbal reasoning.

Apparently there are two forms of the CS, since two test review kits were received, one labeled "Vocational." As far as could be determined, there is no difference in the test materials, but there are some minor differences in the *Orientation Booklets* designed for the student taking the CS. Since there are no differences in the test materials there are also no differences in the test results, nor in the career information provided. This seems rather strange, given the two "forms" and given that some students might be counseled to continue into higher education and others to enter the work force directly.

Each test review kit is made up of six different booklets, a sample machine-scored answer sheet, a computerized narrative report for the individual student, and a computerized class list giving summary data for a class, for use by the teacher and/or counselor.

The use of the words "career" and "survey" for both the overall questionnaire and each of the parts is quite confusing. The confusion is compounded by the fact that part 1 was originally called the Ohio Interest Survey, which in turn was based on the Ohio Vocational Interest Survey.

USE IN COUNSELING

The CS was developed for students in grades seven through twelve and for use with adults, and is designed to provide information on 12 career interest areas that were developed to fit into a bipolar model of people-things versus data-ideas. If the CS were to be used, it would seem most appropriate for high school students, especially in a group setting, and for exploratory career counseling to provide potential directions rather than specific confirmatory data. The directions for administration are quite explicit and seem to be written for the typical classroom teacher who has had relatively little psychometric training, but is often called upon to be a test administrator. The CS seems to target group, rather than individual, usage and is most appropriate for junior high school and high school students rather than adults. Although the CS can be hand scored, realistically it requires contracting with the publisher for computer scoring services, and thus, can represent an allocation of scarce resources that a school district may not have available.

TECHNICAL CONSIDERATIONS

Neither of the test review kits contained anything resembling a test manual. Yet some four years ago, in preparation for a review of this test for the *Mental Measurements Yearbook* (Domino, 1989), what looked like page proofs of a rough draft of a manual was received, and Borman (1989) in his MMY review mentions a *Counselor's Guide* similar to a test manual. Domino (1989) wrote in an MMY review that the normative sample of almost 3000 junior high school students, 7000 high school students, and 681 lower division college students, seemed large, but was made up of samples of convenience rather than any stratified or representative sample. Part 1 seemed quite promising, with satisfactory reliability and some solid validity information, although the 12 interest scales appear to intercorrelate substantially. Part 2 was psychometrically disregarded by the test authors, and seemed to add very little. Part 3 was clearly suspect, and lacked the evidence needed to judge whether this section really measured two types of reasoning abilities, and whether these were indeed differentially related to career choice.

OVERALL CRITIQUE

The CS, and especially Part 1, is potentially useful but needs the guiding hand of someone familiar with both the basics of psychometrics and the fundamentals of the school environment. The CS is now under the umbrella of American College Testing, and it is hoped that their staff will take the necessary steps to revise this instrument. For now, there is a deep chasm between the intent of the CS and the evidence needed. That is, there is no empirical evidence presented that the information generated by the CS accomplishes its three primary purposes: (a) stimulates the counseling process, (b) encourages the exploration of new career areas, and (c) provides a link between long-range career plans and short range educational decisions.

REFERENCES

Borman, C. (1989) Review of the Career Survey. In J.C. Conoley & J.J. Kramer, (Eds.). *Tenth mental measurements yearbook*. Lincoln, NE: University of Nebraska Press.

Domino, G. (1989) Review of the Career Survey. In J.C. Conoley & J.J. Kramer, (Eds.). *Tenth mental measurements yearbook*. Lincoln, NE: University of Nebraska Press.

NOTE: Portions of this review were abridged from the author's original review in the *Tenth Mental Measurements Yearbook* with permission of the Buros Institute.

Differential Aptitude Tests (DAT) with Career Interest Inventory (CII)

George K. Bennett, Harold G. Seashore and
Alexander G. Wesman contributed to the
underlying philosophy of the DAT

The Psychological Corporation
555 Academic Court
San Antonio, TX 78204-2498

Target Population: Grades 7–12, as well as adults.

Statement of the Purpose of the Instrument: The DAT is a battery of eight tests designed to measure students' ability to learn or to succeed in a number of different areas. The DAT is designed to be used alone or in conjunction with the *Career Interest Inventory*, a career guidance instrument designed to provide information about students' educational goals, interest in a variety of school subjects and activities, and interest in fields of work. When the DAT is used in conjunction with the *Career Interest Inventory*, a complete profile of students' interests and aptitudes can be developed.

Titles of Subtests, Scales, Scores Provided: DAT: Verbal Reasoning, Numerical Reasoning, Abstract Reasoning, Perceptual Speed and Accuracy, Mechanical Reasoning, Space Relations, Spelling, and Language Usage; additional score: Scholastic Aptitude (VR + NR). *Career Interest Inventory* Occupational Groups: Social Science, Clerical Services, Health Services, Agriculture, Customer Services, Fine Arts, Mathematics and Science, Building Trades, Educational Services, Legal Services, Transportation, Sales, Management, Benchwork, and Machine Operation.

Forms and Levels Available, with Dates of Publication/Revision of Each: Two levels of the DAT and *Career Interest Inventory* are available. Level 1 is designed to be used with students in Grades 7–9; Level 2 is designed to be used with students in Grades 10–12. Both levels of the DAT can be used with adults. However, it is recommended that only the Level 2 of the *Career Interest Inventory* be used with adults. The publication date of both the DAT and *Career Interest Inventory* is 1990. Only one of the two forms of the DAT is currently available, Form C. Only one form of the *Career Interest Inventory* is available. A *Partial Battery* is also available for both Levels 1 and 2 of the DAT. It consists of two tests, Verbal Reasoning and Numerical Reasoning. The *Partial Battery* may also be used with or without either level of the *Career Interest Inventory*.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: *DAT with Career Interest Inventory Counselor's Manual*, published in 1991; DAT Fall and Spring *Norms Booklets*, published in 1991; DAT *Technical Manual*, published in 1992; *Counselor's Manual for Interpreting the Career Interest Inventory*, published in 1991; *Using the DAT with Adults*, published in 1991; *Guide to Careers Student Workbook*, published in 1991.

Languages in Which Available: English Only.

Time: Actual Test Time: DAT—186 minutes; The *Career Interest Inventory* is untimed (approximate time = 30 minutes); DAT *Partial Battery*—55 minutes.
Total Administration Time: DAT—231 minutes; with Career Interest Inventory—261 minutes; DAT *Partial Battery*—65 minutes; with Career Interest Inventory—95 minutes. (DAT with Career Interest Inventory time is approximate since Career Interest Inventory is untimed.)

Norm Group(s) on Which Scores Are Based: DAT with *Career Interest Inventory*—192,000 students from 520 school districts, male and female, grades 7–12, fall and spring; an additional set of grade 12 norms are also provided on the basis of students' post-high school plans: vocational/technical school, 2-year community college, 4-year college or university, and employment.

DAT with *Career Interest Inventory* 2000 adults from 43 programs in 17 states, male and female, in prison, vocational/technical, community college, and adult basic education programs.

Manner in Which Results Are Reported for Individuals

Types of Scores: DAT—Percentile ranks, stanines, scaled scores, and normal curve equivalents for males and for females, Grades 7–12, fall and spring, as well as for adults in prison, vocational/technical, community college, and adult basic education programs; and Grade 12 students on the basis of students' post-high school plans: vocational/technical school, two-year community college, four-year college or university, and employment.
Career Interest Inventory —occupational group consistency index and raw scores.

Report Format/Content

**Basic Service:* DAT with *Career Interest Inventory* Reports: Individual Report with Narrative, Student Profile, List Report, Record Label; DAT only Reports—Individual Report, Record Label, List Report; DAT *Partial Battery* with *Career Interest Inventory* Reports—Individual Report with Narrative, Record Label, List Report; DAT *Partial Battery* only Reports—Individual Report, Record Label, List Report; *Career Interest Inventory* only Reports—Individual Report with Narrative, Record Label.

Options: Not Available.

Report Format/Content for Group Summaries*

Basic Service: DAT with *Career Interest Inventory* Reports—Counselor's Report, Summary of Total Group, Frequency Distribution, Local Norms, Student Data Tape, Student Data Diskette; DAT *Partial Battery* with *Career Interest Inventory* Report—Counselor's Report; ***Career Interest Inventory* only Reports—Counselor's Report, Occupational Interest Report, Career Planning Summary, Student Data Tape, Student Data Diskette.

* All reports are sold separately.

** Also available when DAT with *Career Interest Inventory* combination scoring services are ordered.

Scoring

Machine Scoring Service (Prices valid through December 31, 1994)

Cost of basic service per counselee: DAT Type 1 answer document—$1.71; DAT *Partial Battery* answer document—$1.58; DAT with *Career Interest Inventory* answer document—$2.53; DAT *Partial Battery* with *Career Interest Inventory* answer documents—$2.27. DAT with *Career Interest Inventory* Reports—Individual Report with Narrative $1.09, Student Profile $.75, Counselor's Report $.57; DAT only Reports Individual Report $.60, Student Record Label $.47, List Report $.40, Summary of Total Group $.26, Frequency Distribution $.53, Local Norms $.31,

BEST COPY AVAILABLE

Student Data Tape (per student) $.28. Student DAT Diskette (per student) $.37. DAT *Partial Battery* with *Career Interest Inventory* Reports-Individual Report with Narrative $1.06. Counselor's Report $.55; DAT *Partial Battery* only Report—Individual Report $.58; *Career Interest Inventory* only Reports—$.54. and Counselor's Report $.59.

Cost of Options: Not available.

Time required for scoring and returning: Twenty-one calendar days.

Hand-Scoring

Scored by: Counselor.

Time required for scoring: Scoring is immediate, when *Ready-score*™ Answer Documents are used. These documents record and score test responses at the same time.

Local Machine Scoring: (Prices valid through December 31, 1994).

Provisions/conditions/equipment required: Customers can purchase a norms tape for the DAT, Levels 1 or 2. = $2,100.00; Type 2 Machine-scorable Answer Documents are used with NCS Sentry™ Scanners.

Computer Software Options Available: (Prices valid through December 31, 1994). Not available for DAT, Form C, at this time. The previous edition of the DAT, Forms V and W, has a computerized adaptive version. Start-up package used to test 10 cases includes Diskette A, Diskette B/C, *User's Manual*, Diskette Jacket/Waiting List Form, 10 *Orientation Booklets*, 10 Score Report Folders, Diskette B/C and the *User's Manual* are reusable = $145.50; Replenishment Package includes Diskette A, Diskette Jacket/Waiting List Form, 10 *Orientation Booklets*, 10 Score Report Folders; can be used to test 10 examinees, provided user already has Diskette B/C and the *User's manual* = $75.00.

Cost of Materials (Prices valid through December 31, 1994)

Specimen Set: DAT with *Career Interest Inventory*

Counselee Materials: Examination Kit: $21.50; *Career Interest Inventory* Examination Kit = $11.50; *Test Booklets (Level 1 or Level 2), package of 25, with Directions = $81.50; *DAT *Partial Battery* Test Booklets (Level 1 or Level 2), package of 25, with Directions = $37.50; Type 1 Machine-Scorable Answer Documents for Scoring by The Psychological Corporation, package of 100, DAT only (Levels 1 or 2) = $63.50; DAT with *Career Interest Inventory* Answer Documents (Levels 1 or 2) = $96.00; DAT only (Levels 1 or 2) Type 2 Machine-Scorable Answer Documents for Local Machine-Scoring on NCS Sentry™ Scanners, package of 100 = $82.00; DAT *Ready-Score*™ Answer Documents (Levels 1 or 2) = $45.00; DAT *Partial Battery* Type 2 Machine-Scorable Answer Documents DAT only (Levels 1 or 2) = $13.50.

Career Interest Inventory only Hand-scorable Booklets, package of 25, (Level 1 = $37.50; Level 2 = $40.50); *Career Interest Inventory* Type 1 Machine-Scorable Documents, package of 25, (Level 1 = $37.50; Level 2 = $40.50); Type 2 Machine-Scorable Documents, package of 25 (Level 1 = $37.50; Level 2 = $40.50).

**Exploring Aptitudes: An Introduction to the Differential Aptitude Tests*, package of 25 = $12.00; **Exploring Interests: An Introduction to the Career Interest Inventory*, package of 25 = $11.50; **Using Test Results for Decision-Making*, package of 25 = $12.00; *Practice Tests, package of 25, with Directions = $17.50; **Guide to Careers Student Workbook* = $74.50; **Norms Booklets* (Fall or Spring) = $21.50; **Using the DAT with Adults* = $21.50; **DAT with Career Interest Inventory Counselor's Manual* = $37.50; *DAT *Technical Manual* = $21.50; **Directions for Administering* (Levels 1 or 2) = $4.50; **Directions for Administering the DAT Partial Battery* = $4.50; **Directions for Practice Test* = $3.00; **Counselor's Manual for Interpreting the Career Interest Inventory* = $32.50; **Directions for Administering the Career Interest Inventory* = $4.50.

* Indicates reusable materials.

Additional Comments of Interest to Users: The previous edition of the DAT, Forms V and W, has been superseded by Form C. However, these forms may still be ordered. See the previous edition of *A Counselor's Guide to Vocational Guidance Instruments*, 1988, for a review of the DAT, Forms V and W.

Published Reviews:

Hambleton, R. K. (1985). Review of Differential Aptitude Tests: Forms V & W. In J. V. Mitchell, Jr. (Ed.), *Ninth mental measurements yearbook*. Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

Pennock-Román, M. (1988). A Review of the Differential Aptitude Tests: Forms V & W. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to career assessment instruments (2nd ed.)*. Alexandria, VA: National Career Development Association.

Sander, D. (1985). Review of Differential Aptitude Tests: Forms V & W. In J. V. Mitchell, Jr. (Ed.), *Ninth mental measurements yearbook*. Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

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DIFFERENTIAL APTITUDE TESTS

Description

The Differential Aptitude Tests (DAT), Forms C and D are 1990 revisions of Forms V and W of this long-lived battery consisting of eight tests. Only Form C is currently available in print. The DAT authors' orientation toward aptitudes emphasizes the individual's ability to acquire knowledge through training. This definition is consistent with aspects of several cognitive psychologists' theories today, yet is an inadequate representation of any. The authors were urged by Bouchard (1978) to make clear the theoretical orientation of the test, and this still needs attention.

Overall, the test materials are attractive and of high quality. The test is available in several formats, along with technical manuals, norm tables, and response sheets. The tests were based on new items generally similar to those of earlier versions except for Perceptual Speed and Accuracy, which is identical with the earlier Clerical Speed and Accuracy test. Each test was developed for two levels: Level 1, used with grades 7–9, and Level 2, used with grades 10–12. Level 2 is also intended for use with adults. The authors formed a special committee to review items for gender and ethnic bias, in response to previous reviews, and the items do not appear to have any overtly insensitive aspects. Readability is reported to be at 5th grade level. The tests were shortened considerably from earlier versions with little loss of reliability.

Use in Counseling

The DAT *Individual Report* for students is presented in numerical, graphic, and narrative formats comprising an Aptitude Profile. The report is meant to be interpreted either by an experienced counselor by itself or in combination with the Career Interest Inventory CII), or in simplified form by the student. The narrative report is clear, but the numerical presentation requires more effort to understand. A brief sheet and pamphlet are provided for students' self-interpretation. While the information provided in the *Individual Report* is useful, students often take very literally such information; there is no substitute for trained counselor assistance. The *Counselor's Manual* (The Psychological Corporation, 1991b) provides a useful guide to integrating information of the DAT with the CII in counseling students.

Since the DAT is used to interpret an individual's abilities, it is recommended that the counselor determine the needs of the examinee and communicate the results based on those needs, considering that the results may cause anxiety in some cases. Interpretations may be used for varied purposes, including helping students to understand their own levels of performance in different areas. Used in conjunction with the CII, the DAT can help students choose among career options based on their individual strengths and weaknesses.

Technical Considerations

Raw, percentile, stanine, NCE, and scaled scores are all available in the *Technical Manual* (The Psychological Corporation, 1992). The DAT authors finally abandoned their long-term use of 23 percentile ranges after repeated criticisms and are to be commended. The scaled scores are presented with little discussion and are confusing.

Norm tables at each grade level between 7 and 12 and for adults are available for male, female, and combined sex scores for fall and spring testing. Equating tables between forms V and W and the new forms C and D are given, but the method of equating is not stated. The norm samples are large and follow closely the 1980 census distributions with respect to important demographic features. The nonresponse rate for schools contacted is still not presented, a criticism of the form V and W sampling, which is still needed in order to understand the representativeness of the sample.

Test reliabilities (KR-20) are all suitably high, in the .80s to .90s for all grade level by gender groups. Alternate form reliabilities are similarly reported with values in the .70s to .80s, again appropriately high. Raw score standard errors of measurement are provided in the *Technical Manual* and also appear as confidence bands on the *Individual Report* (The Psychological Corporation, 1991b).

The authors contend that the tests provide information about many areas of mental activity, but the relative importance and complexity of the aptitudes is not presented, nor is the degree of trainability for the various tests. This is relevant to construct validity for the tests, which is not really addressed by the authors; nor are factor analyses of the DAT tests reported.

Concurrent validity evidence is presented in abundance. Many different achievement tests are listed, along with correlations with the eight DAT tests, sample size, and other relevant information. The presentation of many pages of such information would be made more useful by including a summary of either weighted or median correlations for each standardized test examined. Correlations with grade point average are also presented, and a similar summary by grade level is needed. Finally, expectancy tables for course letter grades are presented, but they are not as definite or helpful as they might be if specific courses such as Algebra I or Biology I were represented. Such courses are quite standardized across the country and would give counselors more specific information to assist students.

Evidence for predictive validity is conspicuous by its absence. In the DAT for Personnel and Career Assessment (PCA), a short form of Form V devised for post-high school and adult assessment (for a review see Willson, in press), extensive data on DAT test scores' relation to job performance are given. Such data would be extremely helpful, especially for the Level 2 tests, and the DAT authors are encouraged to include such data as it becomes available.

Finally, the issue of differential validity must be considered. For every review of the DAT since its inception (for example, Bouchard, 1978; Hambleton, 1985; Pennock-Román, 1985), reviewers have indicated both the absence of differential validity data and the consequent problems raised in overinterpreting profiles of scores. Predictive validity such as that from the DAT for PCA would be helpful, at least in showing that certain tests might be related to job performance in specific occupations. The Perceptual Speed and Accuracy test does not exhibit high concurrent validity. Unless its use can be shown for occupational differentiation, its theoretical and practical justification appear to be questionable.

Computer Adaptive Edition

The DAT Computerized Adaptive Edition (The Psychological Corporation, 1993), termed here DAT Adaptive, is based on Forms V and W of the Fourth Edition of the DAT. It requires an IBM PC/XT/AT or PS2 or equivalent with CGA or Hercules graphics or Apple IIc, IIe, II+ or compatible. An orientation booklet is provided to examinees to prepare them for the computer testing. It is readable and generally very helpful. The technical manual for the DAT Adaptive uses a hard-to-read print face for the first 14 pages; these should be improved immediately. Technical information is so abbreviated as to be uninformative.

Since the test is computer adaptive, a scaling model is necessary to estimate each examinee's "ability" on a given test. Rasch modeling was used to develop the initial version of the test. The three-parameter item response theory (IRT) model was later applied to the items for equating and research purposes.

An examinee always takes half the number of items of the printed version of the DAT tests. This is somewhat inconsistent with the typical practice of tailored or adaptive testing that requires only sufficient items to estimate ability accurately. The authors should present data on the number of students for whom half the items are sufficient for ability estimation at a fixed error of measurement. The algorithm used to select the next item is based on a Bayesian model with tables for item information at various ability levels; the next item is selected from the ability range indicated, and if several items are equivalent one is selected randomly. The initial starting item is at the examinee's grade level mean ability score.

Since the DAT Adaptive and Forms C and D are based on different sets of items, there is no evidence that they can be used interchangeably with students at present.

Reliability is reported only as correlation with printed Form W. This is inadequate, because it is of great importance that the DAT Adaptive produce ability estimates that are similar. Evidence for ability estimate stability is needed. Also, the actual correlations with Form W are quite good except for Clerical Speed and Accuracy, which does not appear to function the same way on the DAT Adaptive as with the paper version. The only validity data presented are results of a factor analysis. Apparently, concurrent validity is inferred from the correlations with Form W. Again, more research is needed.

Overall Critique

As some earlier reviewers have discussed, the utility of the eight (or possibly fewer) tests as a counseling tool must be compared to the information gained from using a less time-consuming aptitude or achievement battery. While we are willing to grant the DAT its longevity and authority as a vehicle for discovery of aptitudes, the tests' reported capability to differentiate academic or occupational success is quite limited. Less emphasis by the authors on the differential aspect of the tests' information would help prevent inappropriate uses of this well-developed test. In support of the DAT, few other tests can span both the academic and occupational areas and provide information that is well-integrated with career interest investigation.

The computer-based version at present does not exhibit the same extensive concurrent validity as Forms C and D, and the authors are encouraged to provide additional validity information to support its use.

CAREER INTEREST INVENTORY

Description

The Career Interest Inventory (CII) is a paper-and-pencil, self-report career guidance instrument which is designed to assist students, grades 7–12, and adults with career decisions. It can be administered for individuals or groups by itself or in combination with the DAT. The Inventory is available in two forms: a machine-scorable form and a hand-scorable booklet.

Because needs and perceptions of the world of work change as a person matures, the CII has two levels: Level 1 for grades 7–9 and Level 2 for grades 10–12 and beyond. Level 1 has 120 work-activity statements and 32 high school subject and activity statements. Level 2 contains 150 work-activity statements and 20 post-secondary course statements. The statements on both forms request responses on a 5-point rating scale varying from "Like very much" to "Dislike a great deal."

The work-activity statements for both levels are linked with occupational information from the Department of Labor's publications, *The Dictionary of Occupational Titles* (DOT), the *Guide for Occupational Exploration* (GOE), the *Occupational Outlook Handbook*, and the *Job Outlook in Brief*.

Reports are available in four forms: the *Individual Report*, the *Counselor's Report*, and two group reports, the *Planning Summary* and the *Occupational Interest Report*. For Level 1 the Individual Report yields scores on 15 occupational groups, 16 subject areas, and 16 school activities. Level 2 reports scores on 15 occupational groups and 20 subject areas. Because different response patterns can result in the same interest score, a consistency index has been developed.

Use in Counseling

The inventory materials are attractive and of high quality. Especially appealing is the *Guide to Careers Student Workbook*. The booklet *Exploring Interests* and the hand-scorable test booklet are also attractive and easy to understand. The statements are carefully worded and appear to relate to the purposes for which the test was designed. The *Counselor's Manual for Interpreting the Career Interest Inventory* (The Psychological Corporation, 1991a) is well-presented and straightforward. All relevant information for interpreting the CII is readily accessible in a language that school counselors can easily understand.

Although it is recommended that the examiner become familiar with the procedures for administering the hand-scorable version of the CII, no formal training is required. Each of the reports is explained in such a simple fashion that one can interpret this inventory without anything more than the manual itself.

The *Counselor's Report* shows 1) the level of interest the student has for each of the Occupational Scales, 2) the GOE code corresponding to each area, 3) the Consistency Index showing the student's pattern of response, and 4) the student's preferences for school subjects and activities. The *Planning Summary* is an optional report that presents all of the above information in percentages, and the *Occupational Interest Report*, which organizes students into the 15 occupational groups based on their interests, can be used by teachers, counselors, and school districts for planning.

Although the CII is designed to be given alone, the authors recommend that it be given along with the DAT. The rationale is that both present a more complete profile of the student's interests and capabilities. When administered together the *Individual Report* includes a profile of DAT scores with a narrative that relates these to the student's interests in the occupational, subject, and activities areas. Also provided is the *DAT with Career Interest Counselor's Report*. It shows whether students' aptitudes and interests are consistent with their occupational interests. If the CII is administered alone, it is recommended by the authors that the counselor relate the school subjects and activities to the Occupational Group categories; a table of areas of interest is provided to assist in this. Before administering the test it is also recommended that a 30–55 minute introductory session be held in order to acquaint the student with the world of work. A separate workbook is available for this purpose.

Technical considerations

Means and standard deviations by grade and gender are provided for the 15 Occupational Groups. Percentages for females and males are given for Low, Medium, and High interest scores. Percentages for females and males who like and dislike school subject areas and school activities are also presented.

Internal consistency using Cronbach's alpha coefficient for the 15 Occupational Group scales range from .82 to .94, varying slightly from Level 1 to Level 2, with the greatest difference on the Management scale (.84 on Level 1 to .91 on Level 2). The coefficients indicate respectable internal consistency overall.

Correlations among the scales for both levels are similar. The highest correlation is between Building Trades and Machine Operation (.86) and the two lowest are between Building Trades and Legal Services and between Machine Operation and Educational Services (both .01).

Factor analysis performed on the 120 work-activity statements in Level 1 resulted in 8 factors. For the 150 statements in Level 2, 10 factors were found. Factors were interpretable through content relatedness of statements to the Occupational Groups.

When the CII was related to the Ohio Vocational Interest Survey (OVIS II), the highest correlations are reported between those scales judged to have the closest matches. No explanation is given about how the judgments were made. Examples of these correlations are (CII with OVIS II): Clerical Services with Clerical Scale, .62; Legal Services with Legal Service, .59; and Machine Operation with Machine Operation, .74. No correlations are given relating scores on occupational scales with satisfaction of individuals employed in those occupations.

Overall Critique

The CII seems to us an appealing and appropriate measure for the purpose of career exploration. A major plus is the simplicity of the presentation of the Individual Profile. The output is immediately clear to the test-taker, which is not true for many other career instruments.

The greatest reservation we have is about the hand-scorable version of the CII. Although directions are given in the test booklet itself, there is very little explanation to the test-taker in the manual about how to score or interpret the results of the profiles. The inventory questions are straightforward, but the scoring seems cumbersome and confusing. Also, there is no explanation for presenting a profile for students from the hand-scorable results.

In summary the CII appears to be an good career interest measure. Because of its overall simplicity in interpretation, it makes a good alternative to more complicated competitors.

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Employee Aptitude Survey (EAS)

G. Grimsley, F. L. Ruch,
N. D. Warren and J. S. Ford

Psychological Services, Inc.
100 West Broadway, Suite 1100
Glendale, CA 91210

Target Population: HR Executives, I/O Psychologists (public & private sectors), career counselors.

Statement of the Purpose of the Instrument: The Employee Aptitude Survey was designed to provide organizations with a practical, valid tool for personnel selection and a useful diagnostic tool for vocational guidance. All tests suitable for group administration.

Titles of Subtests, Scales, Scores Provided: EAS #1 Verbal Comprehension, 30 items, 5 minutes; #2 Numerical Ability, 75 items, 10 minutes; #3 Visual Pursuit, 30 items, 5 minutes; #4 Visual Speed and Accuracy, 150 items, 5 minutes; #5 Space Visualization, 50 items, 5 minutes; #6 Numerical Reasoning, 20 items, 5 minutes; #7 Verbal Reasoning, 30 items, 5 minutes; #8 Word Fluency, open-ended, 5 minutes; #9 Manual Speed and Accuracy, 5 minutes; #10 Symbolic Reasoning, 30 items, 5 minutes. All tests paper-pencil, multiple choice (except #8).

Forms and Levels Available, with Dates of Publication/Revision of Each: A & B forms available. Most recent copyright dates 1984 and 1985.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: Technical Report—copyright 1980; 1993 publication (now in production).

Languages in Which Available: English.

Time: Actual Test Time: typically 5 minutes.
Total Administration Time: Varies.

Norm Group(s) on Which Scores Are Based: Norms available for over 60 job classifications, i.e., Managerial and Supervisory, Clerical, Skilled and Semi-Skilled, and Technical Positions.

Manner in Which Results Are Reported for Individuals

Types of Scores: Raw scores obtained by using a scoring formula (Rights minus a ¼ of Wrongs).

Scoring

Machine Scoring Service: Not available.

Hand-Scoring: Scoring templates available.

Local Machine Scoring:

Provisions/conditions/equipment required. We have optically scannable forms of all of the EAS tests except #8 and #9. The hardware/software available to scan/score the tests can be obtained from NCS (see attached).

Computer Software Options Available: Not available.

Cost of Materials (1993)

Specimen Set: $47.00 (individual test pkg prices attached and highlighted).

Counselee Materials: Specimen set contains 1 of each test, Technical Report, Examiner's Guide, to be used solely as a reference—not to be administered. $38.50 (1–19 total packages). $32.75 (20–199 total packages). $26.00 (200 or more total packages).

Additional Comments of Interest to Users: New Technical Report—more validation information, additional normative data. Pending—computer-administered versions.

Published Reviews:

Adkins, D. C. (1959). Review of the Employee Aptitude Survey. In O. K. Buros (Ed.), *Fifth mental measurements yearbook: Vol. I*. Highland Park, NJ: Gryphon Press.

Reviewed By

James E. Alwood

Research and Evaluation Supervisor
Pennsylvania Power & Light Company

DESCRIPTION

The Employee Aptitude Survey Tests (EAS) is a set of 10 ability tests used for personnel selection and vocational or career counseling. Designed primarily to assess abilities that are important for a variety of jobs, they originated from a battery of 15 tests constructed in the 1940s. Floyd L. Ruch, founder and past president of Psychological Services Incorporated (PSI), was primarily responsible for the EAS development. Ruch earned his Ph.D. in developmental psychology from Stanford in 1930, but spent most of his professional life as an industrial/organizational psychologist. He and three colleagues, James S. Ford, Glen Grimsley, and Neil D. Warren, shared in the development of the EAS tests (Fitzpatrick, 1984).

Following the development of the EAS, general distribution was withheld until 1963 while validation and standardization studies were conducted. Since then the publisher has continually compiled data and has updated the Technical Manual periodically. The Technical Manual (Ruch, Stang, & McKillip, 1993), from which the following was taken, contains a brief description of the development of each test.

Verbal Comprehension (EAS-1) measures the ability to understand written words and the ideas associated with them. Each of the 30 items consists of a word followed by a list of four other words. The examinee must select the synonym for the first word from the four that follow.

Numerical Ability (EAS-2) measures addition, subtraction, multiplication, and division skills. The 75-item test consists of three separately timed parts of 25 items each. Part I consists of operations with whole numbers, Part II consists of operations with decimals, and Part III consists of operations with common fractions. There are four possible choices plus a "No Correct Answer Given" choice. The examinee is allowed 2 minutes to complete Part I and 4 minutes each to complete Part II and Part III.

Visual Pursuit (EAS-3) measures the ability to make rapid, accurate scanning movements with the eyes. The 30-item test consists of a network of lines in a tangled pattern. From a starting point on the right-hand side of the page the examinee visually traces a line to a column of boxes on the left. The answer, indicated by the endpoint of the line, is selected from five alternatives.

Visual Speed (EAS-4) measures the ability to see details quickly and accurately. Each item in the 150-item test consists of pairs of numbers and symbols that must be compared to determine if they are the same or different.

Space Visualization (EAS-5) measures the ability to visualize and manipulate objects in three dimensions on a two-dimensional drawing. The 50-item test consists of ten piles of nine neatly stacked blocks. The blocks are all the same size and shape. Five of the blocks in each stack are lettered. Examinees must determine, for each lettered block in the stack, how many other blocks it touches.

Numerical Reasoning (EAS-6) measures the ability to analyze logical relationships and find underlying principles within series of numbers. Each item in the 20-item test consists of a series of seven numbers. The examinee selects, from five choices, the next number in the series.

Verbal Reasoning (EAS-7) measures the ability to draw valid conclusions from a series of facts. There are five possible conclusions for each of six series of facts. Given the facts, the examinee must decide for each conclusion whether it is true, false, or unknown.

Word Fluency (EAS-8) measures flexibility and fluency with words. Given one of three letters, the task is to write as many legitimate words as possible that begin with the designated letter. The raw score is determined by counting the number of words written. The test score is obtained from a table in the Examiners Manual.

Manual Speed (EAS-9) measures the ability to make finger movements rapidly and accurately. The multiple-choice paper and pencil test consists of an array of 750 evenly spaced lines of small circles. The examines must place a pencil dot in as many of the circles as possible in the time allowed.

Symbolic Reasoning (EAS-10) measures the ability to apply general rules to specific problems and to come up with logical answers. Each item in the 30 item test consists of establishing relationships in the form of "A to B to C." Given the relationship, the examinee must decide whether a proposed relationship between "A" and "C" is true, false, or unknown. For example: Given $A > B > C$; therefore, $A = C$; true, false, or unknown.

Two equivalent forms are available for all tests except EAS-8 and EAS-9. EAS-8 has been normed for three specific letters. This provides three equivalent forms for EAS-8. Any of the three letters may be used interchangeably. Retesting using EAS-9 is recommended only after 48 hours. All tests but two have a time limit of 5 minutes. EAS-2 and EAS-3 have a time limit of 10 minutes. Scoring for each test except EAS-8, includes a correction for guessing (e.g. Rights minus $1/(b - 1)$ Wrong, where b is the number of choices).

All but two of the tests are objectively scored and the Examiner's Manual gives adequate directions to reduce the scoring subjectivity for the other two.

The eight multiple choice tests can either be hand-scored or machine-scored. Optically scannable forms are available.

USE IN COUNSELING

The EAS tests were developed to be used primarily for personnel selection. However, the publisher also suggests it may be used for vocational guidance or career counseling. Used for this purpose, the counselor could identify an individual's strength and weaknesses by comparing his or her scores on the tests with others in a number of different job classifications. There are 82 norms tables, including 65 job classifications and 17 general or educational categories, available in a separate publication. This Norms Report represents an accumulation of 40 years of experience with the tests. Most of the job classifications have been indexed using the *Dictionary of Occupational Titles* codes. This will allow the individual and/or counselor to obtain detailed information about the jobs for which norms exist. Unfortunately, the norms tables reflect performance on individual tests, not on batteries of tests. Therefore, little more can be gained beyond how an individual scores in relationship to other individuals in the particular job classification. The inclusion of norms for a given test in a particular occupation does not necessarily mean it is recommended in the battery for that position.

The publisher does provide test battery validity information for four very broad occupational groupings: Professional, Managerial, and Supervisory; Clerical; Production/Mechanical (Skilled and Semi-Skilled); and Technical. The jobs making up each group are indexed by DOT code and may prove useful in matching performance on combinations of the tests (Ruch & Ruch, 1980).

TECHNICAL CONSIDERATIONS

As reported in the technical manual (Ruch, Stang, & McKillip, 1993), alternate forms reliability coefficients ranged from .76 for EAS-8 to .91 for EAS-4. The test-retest reliability estimate for EAS-9 was .75. Sample sizes were between 853 and 1,885. Studies of the equivalency of the forms showed no statistically significant differences in the means and standard deviations of the individual forms. However, a statistically significant practice effect was detected. The authors correctly proposed that both forms of a test should be administered when the maximization of reliability was important or when the first administration has been contaminated. For this purpose, the manual contains a table of adjustments for retest scores. The corrected score can be used alone, or in combination with the scores on both forms of the test.

The Technical Manual reports a total of 725 criterion-related validity coefficients from 160 studies. These are grouped under broad occupational categories. Some of the studies utilize very small samples while others suffer from severe restriction in range. Consequently, in these cases, the coefficients tend to be unstable and poor estimates of validity.

Of more interest are the validity estimates provided by meta-analytic techniques which combines the information from all the studies to obtain more accurate estimates. A total of 49 meta-analyses were performed. Estimated validity coefficients ranged from .16 to .67. Sample sizes were from 127 to 2,943.

Construct-related validity shows the tests do not measure pure factors. As is true with most construct-related studies of this nature, there are some common, general mental abilities that underlie performance on the EAS tests. However, there is ample evidence supporting some fairly independent factors. This, in turn, supports the authors concept of "maximum validity per minute of testing time." To maximize validity, it is more efficient to use a combination of short duration tests, each of which measures a unique and important factor.

For the purpose of developing test batteries, eight occupational families were used. Test batteries were then identified by selecting the four tests that were the best predictors of job performance and training success in an occupational family. Four families had sufficient data to compute test battery validity and reliability estimates. Estimated validities ranged from .55 to .83. Composite reliability estimates ranged from .90 to .92.

OVERALL CRITIQUE

The EAS tests appear to be effective tools as part of a selection system based upon an analysis of the job that identify the critical and important aptitudes for success. They have the advantage of short administration and scoring time coupled with a wide variety of normative data. The Examiner's Manual is well designed and contains easily followed step-by-step directions for administration and scoring. In most cases, a clerk can administer and score the tests. The Technical Manual contains ample support for individual test and test battery validity for a number of jobs. The validity and reliability estimates are in line with other test batteries which measure similar aptitudes.

The EAS tests have two major disadvantages. First, information concerning Differential Item Functioning (DIF) or test bias was not available in the manual. This makes it difficult for the selection specialist seeking selection instruments which are free of test bias. Second, some of the tests will be difficult to administer to a disabled person or to some individuals whose second language is English. However, according to the manual, some of the tests are available in other languages.

The availability of the extensive norms will be very useful to the career counselor and selection specialist alike. It is impossible to validate tests for every conceivable job; however, the presence of the available information contained in the Technical Manual and the EAS Norms Report should be valuable to those using the EAS for selection or counseling.

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Fitzpatrick, R. (1984). Review of the *Employee Aptitude Survey*. In D. J. Keyser & R. C. Sweetland (Eds.), *Test critiques*, Vol. I (pp. 266–273). Kansas City: Test Corporation of America.

Ruch, F. L., & Ruch, W. W. (1980). *Employee Aptitude Survey technical report*. Los Angeles: Psychological Services.

Ruch, W. W., Stang, S. W., & McKillip, R. H. (1993). *Employee Aptitude Survey technical manual*. Los Angeles: Psychological Services.

Occupational Aptitude Survey & Interest Schedule-2 (OASIS-2)

Randall M. Parker

PRO-ED
8700 Shoal Creek Blvd.
Austin, TX 78758

Target Population: 8th-12th grade students.

Statement of the Purpose of the Instrument: The second revision of the OASIS was undertaken to improve its psychometric characteristics and usability. A further goal in revising the manual was to clarify and emphasize the purpose of the OASIS, which is to assist 8th-12th grade students in self-exploration, vocational exploration, and career development. The OASIS cannot predict occupations students will or should eventually select for their life's work. Because adolescents frequently possess limited vocational maturity, meager knowledge of the world of work, and little work experience, the OASIS should be used to encourage self-exploration, vocational exploration, and career development. To aid in this process, OASIS scores may be used to assist students in organizing their search for occupational information.

Titles of Subtests, Scales, Scores Provided: OASIS-2 *Aptitude Survey*—General Ability, Verbal Aptitude, Numerical Aptitude, Spatial Aptitude, Perceptual Aptitude, Manual Dexterity. OASIS-2 *Interest Schedule* Artistic, Scientific, Nature, Protective, Mechanical, Industrial, Business Detail, Selling, Accommodating, Humanitarian, Leading-Influencing, Physical Performing.

Forms and Levels Available, with Dates of Publication/Revision of Each: OASIS-2 Revised 1991; Aptitude Survey (AS) 1983/1991—one form/level; Interest Schedule (IS) 1983/1991—one form/level.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: OASIS-2 AS Manual—1991; OASIS-2 IS Manual—1991.

Languages in Which Available: English.

Time: Actual Test Time: AS—35 minutes; IS—30 minutes.
Total Administration Time: AS—45 minutes; IS—35 minutes.

Norm Group(s) on Which Scores Are Based: AS & IS normed on same group of 1,505 8th-12th grade students from 13 states and representative of U.S. census data on geographical region, gender, race, and domicile.

Manner in Which Results Are Reported for Individuals

Types of Scores: Raw scores, stanines, and percentiles.

Report Format/Content

Basic Service: Computer scoring yields a printed profile for AS and/or IS.

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service

Cost of basic service per counselee: $3.40 for an answer sheet and computer scoring for one student for OASIS-2 AS. Same price for OASIS-2 IS. Volume discount available.

Time required for scoring and returning: 2 weeks.

Hand-Scoring

Scored by: clerk; counselor.

Time required for scoring: AS—5 minutes; IS—10 minutes.

Local Machine Scoring: Not available.

Computer Software Options Available: Not available.

Cost of Materials

Specimen Set: OASIS-2 AS—$26.00; OASIS-2 IS—$26.00.

Counselee Materials: AS: Aptitude Test Booklets (reusable)—$29.00 for 10; Hand Score Answer Sheets—$28.00 for 50; Profile Sheets—$19.00 for 50. IS: Interest Test Booklets (reusable)—$28.00 for 25; Hand Score Answer Sheets—$19.00 for 50; Profile Sheets—$19.00 for 50; Interest and Scoring Forms—$11.00 for 50.

Published Reviews:

Borman, C. (1989). Review of the Occupational Aptitude Survey and Interest Schedule: Interest Schedule. In J. C. Conoley & J. J. Kramer (Eds.), *Tenth mental measurements yearbook*. Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

Lowman, R. L. (1989). Review of the Occupational Aptitude Survey and Interest Schedule: Aptitude Survey. In J. C. Conoley & J. J. Kramer (Eds.), *Tenth mental measurements yearbook*. Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

Mossholder, K. W. (1989). Review of the Occupational Aptitude Survey and Interest Schedule: Aptitude Survey. In J. C. Conoley & J. J. Kramer (Eds.), *Tenth mental measurements yearbook*. Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

Parker, R. M. (1988). Review of the Occupational Aptitude Survey and Interest Schedule. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to career assessment instruments* (2nd ed.). Alexandria, VA: National Career Development Association.

Remer, R. (1986). Review of the Occupational Aptitude and Survey Interest Schedule (OASIS). *Journal of Counseling and Development, 64*(7), 467–468.

Thomas, R. G. (1989). Review of the Occupational Aptitude Survey and Interest Schedule: Interest Schedule. In J. C. Conoley & J. J. Kramer (Eds.), *Tenth mental measurements yearbook*. Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

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Reviewed By

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DESCRIPTION

The Occupational Aptitude Survey and Interest Schedule—Second Edition (OASIS-2) (Parker, 1991) was developed to assist students in grades 8–12 in self-exploration, vocational exploration, and career development. The OASIS-2 is made up of two separate instruments-the Aptitude Survey (AS) and the Interest Schedule (IS).

Parker's goal in developing the Aptitude Survey of OASIS-2 was to provide a short and usable instrument similar to the GATB and DAT. The OASIS-2 AS has five subtests: Vocabulary, Computation, Spatial Relations, Word Comparison and Making Marks. These five subtests take a total working time of only 35 minutes. Each item of the Vocabulary subtest contains a list of four words, two of which are either synonyms or antonyms. The GATB and DAT have similar subtests measuring verbal ability. In the Computation subtest, the examinee is required to solve numerical, arithmetic and algebra problems. Items are presented in a multiple-choice format with five alternatives each. The Spatial Relations subtest requires the examinee to inspect a two-dimensional figure to determine which one of four three-dimensional figures can be constructed from the two-dimensional object. Again, the GATB and DAT have similar subtests. Word Comparison requires the examinee to inspect two sets of symbols and determine whether the two sets of words, numbers, or nonsense syllables are the same or different. The last AS subtest is called Making Marks and requires the examinee to draw three lines in the form of an asterisk in each of a series of 160 boxes as quickly as possible. The GATB has a similar subtest that measures motor coordination. The AS Making Marks subtest has two separately timed sections of 30 seconds each. By combining the raw scores of the Vocabulary and Computation subtests, a sixth score is obtained that measures a General Ability (G) factor. Both the GATB and DAT have a similar score that measures a person's general ability, particularly in academic areas. In this second edition of the Aptitude Survey, the Student Booklet has been reformatted so that test items are more readable, and a new, machine-scored answer sheet is available as well as a newly formatted hand-scored answer sheet.

The Interest Schedule (IS) has 240 items that are scored on a 3-point scale using the terms *Like*, *Neutral*, and *Dislike*. Each item is assigned to one of 12 scales, and each scale is made up of 20 items. Of the 20 items for each scale, half of the items are occupational titles and the other half are job activities. The OASIS-2 IS is built upon interest research conducted by the U.S. Employment Service and the early work of Cottle (1950). This research led to the identification of 12 interest factors that are represented in the IS. Like the AS, the IS now has a machine-scorable answer sheet available in addition to a newly formatted, hand-scorable answer sheet.

USE IN COUNSELING

The test manual for the Aptitude Survey has a chapter devoted to interpreting the test results. The OASIS-2 AS uses three kinds of scores: (a) raw scores, (b) percentiles and (c) stanines. Discussion is provided giving the uses and limitations of these three types of scores. The manual gives an excellent set of suggested steps for interpreting the aptitude tests results to students. Also, two sample cases are briefly described to indicate how the results are used in career counseling situations. In the steps for interpreting the test, a suggestion is made to caution the students that the AS will not predict the kind of work they should do. Also, it is suggested that the AS results may change considerably depending on many factors, including new experiences and learning situations. The AS results can be used to organize a search for occupational information. The test format and instructions are clear; however, examinees are not told that the test extracts no penalty for guessing. The student profile sheet is attractive and easy to understand. On the front of the student profile sheet, in addition to the raw scores, percentiles, and stanines, a profile of the student's scores is provided using the stanine scores. This stanine profile shows bands of scores, indicating the range within which the student would likely score on a test retake.

The test manual for the Interest Schedule also has a chapter devoted to interpreting the test results similar to the AS manual. There are three types of scores—raw scores, percentile scores and stanines. Steps for interpreting the test results are given with the same cautions as provided for the AS described above. There is a section in the manual on sex fairness in interpreting interest assessments. Of the 12 scales on the IS, seven of the scales had no significant differences between the male and female norm groups. Therefore, only total group norms are presented for these seven scales. For the other five scales, female, male and total group norms are presented. The test format and instructions are clear and easy to understand as is the student profile sheet.

TECHNICAL CONSIDERATIONS

The OASIS-2 AS was initially standardized and normed on a sample of 1,398 students in grades 8–12 from 11 states. For OASIS-2 AS, the original norm group was retained with minor modifications. Parker (1991) stated that the total norm group was increased by 107 cases to enhance the representativeness of the sample. The current norm group consists of 1,505 students in grades 8–12 residing in 13 states. The table of norms for this second edition of the AS incorporates a change from the previous edition. Originally, norms were provided separately for males and females in Grades 8–10 and 11–12. However, statistical analysis of the normative data revealed no significant differences between gender and grade groups. Therefore, the second edition presents a table of norms for the total norm group of females and males in Grades 8–12.

The norm tables for the AS are easy to understand and use. For this second edition of the test, the norm group has been changed very little from the first edition; however, Remer (1988) made the observation that the original norm group differed statistically from the 1980 census data on the variables considered; that is, sex, ethnicity, region or residence (urban or rural). He was not sure if the discrepancies affected the usefulness of the scores. He did point out, however, that the test manual provides a basis for comparing the norming sample that goes far beyond the efforts of most test developers. Lowman (1989), in reviewing the first edition of the AS, said that the norm group was imbalanced racially and geographically, and that the manner of selecting schools in the sample was not adequately specified. The addition of 107 cases to the norm group for the second edition does not seem to have fully addressed the problems identified by Remer and Lowman.

Reliability coefficients for the AS range from .70 to .94 with a median of .86. Four types of reliability were used in the development of the AS: Cronbach alpha, split-half, alternate forms, and test-retest. In the test manual, Parker (1991) said that the reliability data suggest that the OASIS-2 AS possesses adequate reliability for stimulating client vocational self-exploration; however, the reliabilities are not high enough to use the AS as the sole predictor of job performance in a specific occupation. Reliability data for the second edition of this test seem very similar to data reported for the first edition. Generally, the reliability for the AS is within acceptable standards.

In discussing the validity of the OASIS-2 AS, the test manual reports four types of evidence of construct validity: (1) factor analysis, (2) internal consistency, (3) relationships with other tests, and (4) convergent and discriminant validation. The five subtests of the OASIS-2 AS were developed from factor-analytic studies of the 12 General Aptitude Test Battery (GATB) subtests. Parker (1991) concluded that the results of the factor analysis indicated that five factors accounted for 73% of the variance in the 12 GATB subtests, and these results led to the development of a shorter aptitude test that surveys the predominant factors encompassed by the 12 GATB subtests. Lowman (1989) said that there is little question that the five aptitudes measured by the AS are related to vocational success and are appropriate for an aptitude survey of this nature. However, Lowman criticizes the AS for measuring the same "tried and true" measures of aptitude. He said that evidence has begun to emerge that artistic, social, and mechanical aptitudes are rather independent of some of the aptitudes tapped by the AS. Evidence of construct-related validity included research to determine whether constructs operationally defined by the test scores correlate with other measures of the same constructs. For instance, scores from the first edition of the AS were compared to GATB scores. The correlations, all statistically significant, ranged from .37 to .84 for AS subtest scores and similar GATB subtest scores. Concurrent criterion-related validity was obtained by comparing subtests of the OASIS-2 AS with counterpart subtests from the Iowa Tests of Educational Development, SRA Achievement Series, and the GATB. Convergent validities, correlations between subtests measuring similar aptitudes, were best for the AS and the GATB with correlations ranging from .74 to .87. For the Iowa Tests of Educational Development and the SRA Achievement Series, the correlations with similar subtests on the AS were statistically significant.

In reviewing the first edition of the AS, Morsholder (1989) said that validational evidence was not as complete as would be desired, and he attributed this lack of information on validity to the recent development of the instrument.

Although there is more validity evidence for OASIS-2 AS, there still seems to be incomplete information on the validity of the instrument. Morsholder also criticized the AS for lack of information about predictive validity, and the second edition manual still does not have any information on predictive validity.

The OASIS-2 IS was originally standardized and normed on the same sample of 1,398 students in grades 8–12 from 11 states that was used for the Aptitude Survey. For the second edition of the IS, the same minor modifications made to the AS norms were made to the norm group of the IS. Therefore, what was said about the norm group for the AS applies to the IS.

Cronbach alpha and test-retest reliabilities were employed in the development of the OASIS-2 IS. Alpha coefficients ranged from .78 to .95. Test-retest reliability coefficients ranged from .72 to .91 for the 12 OASIS-2 IS subtests. These coefficients indicate that the IS has sufficient reliability.

The validation techniques used for the IS included content and construct validity. Content validity was demonstrated by showing that the occupational titles and occupational activities listed in the OASIS-2 IS are representative of all the occupations listed in the *Guide for Occupational Exploration* (Harrington & O'Shea, 1984). Factor analysis was used to provide evidence for the construct validity of the IS, and the analysis indicated that the 12 factors or components extracted could be identified as corresponding to one of the IS scales with one possible exception.

OVERALL CRITIQUE

The OASIS-2 is an updated version of the OASIS that was first published in 1983. In reviewing the current versions of the AS and the IS, it is quite clear that several criticisms of the first edition of these tests have been corrected in the second edition. Test reviewers criticized the OASIS for not having a machine-scorable answer sheet. The OASIS-2 has a machine-scorable answer sheet available along with a newly formatted, hand-scorable answer sheet. Another criticism of the original instruments was that they did not use a score range or band employing the standard error to make clear to clients the unimportance of minor differences in scores. The profile forms for both the AS and the IS have been modified to display stanine bands reflecting levels of confidence based on the standard error of measurement for each subtest. The OASIS was also criticized for not having information on the reliability of the score profiles, and OASIS-2 contains information on the reliability of these profiles.

Reviewers of the OASIS were cautious in recommending use of the AS and IS because they felt that the instruments were still in a state of development. In particular, they thought that the AS had great potential if validation data indicated it to be a good substitute for the GATB, especially because of the considerably shorter length of the AS. Evidence for the reliability of the OASIS-2 seems sufficient, but evidence on the validity of the two instruments in this battery still seems to be lacking. Although improvements have been made in response to earlier reviews of these instruments, additional validity evidence is still needed. Therefore, I recommend the use of OASIS-2, with caution.

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Cottle, W. C. (1950). A factorial study of the Multiphasic, Strong, Kuder, and Bell inventories using a population of adult males. *Psychometrika, 15*, 25–47.

Harrington, T. & O'Shea, A. (1984). *Guide for occupational exploration* (2nd ed.). Circle Pines, MN: National Forum Foundation.

Lowman, R. L. (1989). Review of the Occupational Aptitude Survey and Interest Schedule: Aptitude Survey. In J. C. Conoley and J. J. Kramer (Eds.), *Tenth mental measurements yearbook* (pp. 563–564). Lincoln, NE: University of Nebraska Press.

Morsholder, K. W. (1989). Review of the Occupational Aptitude Survey and Interest Schedule: Aptitude Survey. In J. C. Conoley and J. J. Kramer (Eds.), *Tenth mental measurements yearbook* (pp. 564–566). Lincoln, NE: University of Nebraska Press.

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Remer, R. (1988). Review of the Occupational Aptitude Survey and Interest Schedule (OASIS). In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to career assessment instruments* (2nd ed., pp. 208–212). Alexandria, VA: National Career Development Association.

NOTE: Portions of this review were abridged from the author's original review in the *Tenth Mental Measurements Yearbook* with permission of the Buros Institute.

Tests of Adult Basic Education (TABE)

CTB McGraw Hill
20 Ryan Ranch Road
Monterey, CA 93940

Target Population: Age 16 and above.

Statement of the Purpose of the Instrument: To assess basic skills of reading, mathematics and language normally learned in grades 2–12. Diagnostic information about competencies in each of these areas is provided from the complete battery. Scales are used for measuring growth, for placement, for program evaluation, for employment screening, for research, for accountability to fund-providers and many other uses.

Titles of Subtests, Scales, Scores Provided: Reading Vocabulary, Reading Comprehension, Math Computations, Math Concepts and Applications, Language Mechanics, Language Expression, Spelling, Total reading, Total Mathematics, Total Language, and Total Battery.

Forms and Levels Available, with Dates of Publication/Revision of Each: Forms 5 and 6 and Survey Form Levels E, M, D, and A. 1987.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1987.

Languages in Which Available: English only.

Time: Actual Test Time: Complete Battery 228 minutes, Survey 71 minutes.
Total Administration Time: Complete Battery 4 hours, Survey 1.5 hours.

Norm Group(s) on Which Scores Are Based: ABE students, adult offenders, juvenile offenders, votech students.

Manner in Which Results Are Reported for Individuals

Types of Scores: Standard scores, percentiles, grade equivalents, objective mastery.

Report Format/Content

Basic Service: Individual Report with normed and objective scores. Prescriptive reports.

Report Format/Content for Group Summaries

Basic Service: Class list.

Options: Class grouping, objective mastery, item reports.

Scoring

Machine Scoring Service

Cost of basic service per counselee: $1.31.

Time required for scoring and returning: 21 days.

Hand-Scoring

Scored by: clerk; counselor.

Time required for scoring: 5 minutes.

Local Machine Scoring:

Provisions/conditions/equipment required: Scanner and Software with PC or PC 386 2 mb memory 8 mb hard drive.

Computer Software Options Available: Standard administration on-line.

Cost of Materials

Specimen Set: $17.00

Counselee Materials: Test Books—$1.94 (reusable); Locator Test Books—$1.07 (reusable); Answer Sheets—$.34; Locator Answer Sheet—$.26.

Additional Comments of Interest to Users: New Workplace Related Foundation Skills, Workplace Related Problem Solving, TABE Espanol, Publication—Fall, 1993.

Published Reviews:

Lissitz, R. W. (1992). Review of the Tests of Adult Basic Education. In J. J. Kramer & J. C. Conoley (Eds.), *Eleventh mental measurements yearbook.* Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

Osterlind, S. J. (1992). Review of the Tests of Adult Basic Education. In J. J. Kramer & J. C. Conoley (Eds.), *Eleventh mental measurements yearbook.* Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

Steven J. Osterlind

Professor and Director

Center for Educational Assessment

University of Missouri-Columbia

DESCRIPTION

The Tests of Adult Basic Education (TABE), Forms 5 and 6, is a standardized test of academic achievement in four fields: reading, mathematics, language and spelling. It is designed for persons who are out of school, whether as a high school graduate or not. Recommended ages for administration are 18 to adult. The test is available in four nonequivalent levels, from easy to medium to difficult to advanced. A locator test is suggested for choosing which level to administer to a particular examinee. Since it is anticipated that many TABE examinees will also take the Test of General Educational Development (GED), correlations between these tests are provided, but not explained. The test can be

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administered in under one hour. It yields normative scores that can be interpreted as a level of general educational functioning.

Virtually every aspect of test construction was redone for TABE, Forms 5 and 6. The content was reorganized after a thorough review of relevant curricular materials, all of the test's items were freshly prepared, an entirely new standardization process was undertaken, a locator-test was added, the test's reports were redesigned, and most of the ancillary materials were rewritten. Also, a microcomputer software package for scoring answer sheets, looking up norms, and for calculating objectives mastery information is available for the first time.

USE IN COUNSELING

Scores yielded by the TABE can be appropriately used in some, limited counseling situations. It can be used, for example, when there is a need for a global, quick screen of achievement or when there is a need to place someone in a pool of candidates awaiting further, more precise diagnosis. Clearly, however, the TABE is not sensitive to determining clinical or even academic deficiencies. When used as a first cut, however, the TABE can serve a limited purpose; but, importantly, only when combined with the judgments gathered from other more reliable and complete assessments should it be used at all.

The publisher's claims for the information yielded by this new assessment instrument are manifold. According to CTB/McGraw-Hill, TABE, Forms 5 and 6 can predict the probability of passing the GED, provide objective-referenced curriculum scores, produce norm-referenced scores (to four specific adult populations), and can be equated to earlier TABE Forms 3 and 4. Further, throughout the promotional brochures and administrator materials, the publisher boasts of technical rigor, citing claims of "reliability" again and again. The merit of these claims are examined in the technical section below.

Several features were added to the TABE, Forms 5 and 6, that make it attractive to users. In particular, the Practice Exercise, the various scoring options, the microcomputer-based system for interpreting results, and the reports are all appealing features of this instrument. The Practice Exercise is a brief and useful activity intended to acquaint examinees with the format for test items that they will confront on the test. The score reports—of which there are two, an individual report (that may be obtained with or without objectives performance) and a summary report—are pleasing and will likely prove easily read by test users. The scoring options are especially alluring. Either a convenient SCOREZE answer sheet or a scannable form may be used. The administrator must then access the TABE Norms System through a microcomputer, or the same information can be gotten through a series of look-up tables. The Locator Test will probably be useful to test administrators, despite the shortcoming that only vocabulary and mathematics items are included.

Two ancillary publications, the *Test Coordinator's Handbook* and the *Examiner's Manual* are especially helpful. CTB/McGraw-Hill's success in using parallel materials in other achievement tests has benefited the TABE. They are easily read, attractively formatted, and very informative to work-a-day practitioners. All of these features are clear pluses for a testing system that is obviously trying to be "user-friendly."

TECHNICAL CONSIDERATIONS

When one looks beyond the superficial aspects of the test and into the merits for valid interpretations of the numbers yielded by this instrument, serious concerns arise. For example, little technical information is offered about such important aspects of test construction as scaling, norming, score comparability, and equating. Yet, claims to each of these aspects are made in the promotional literature. For example, the *Technical Report* provides scant data about the validity of the score interpretations recommended. This is too serious an omission to call it an oversight. Low correlation coefficients with GED scores are about all that is presented for external-related validity evidence. Nothing at all is mentioned about data gathered for evidencing the diagnostic claim for the test.

Only cursory information about the norming sample is provided, although this is obviously one of the areas of greatest interest to test users. A table cites their numbers but no information is provided about the relevant characteristics of this sample. Although this test may be used with special populations, no information is provided about how to accommodate them.

The same criticism is true for the equating study cited. The reader is left to wonder what happened because the materials say a study was conducted, but it is neither described nor are the results presented for inspection. Also, information about standard errors of measurement of the various subtests is not provided in any meaningful way. Beyond printing IRT standard error curves in the *Technical Report* (without accompanying explanation of their relevance to score interpretation for test users), one is left uninformed about this important aspect of mental measurements.

The issue of test bias is important, both in fact and in perception about a test. Here, the test's developers seem to have invested much energy in explaining the procedures used. Regretfully, they neglected many other equally important technical considerations.

OVERALL CRITIQUE

In summary, while there are appealing aspects to this form of the TABE, such as the ease of use, it appears that CTB/McGraw-Hill did not follow the *Standards for Educational and Psychological Testing* (AERA, APA, NCME, 1985) when developing it. Of major concern is valid interpretations of the scores. This leads one to recommend that if the TABE, Forms 5 and 6, are adopted for use, it should be done so by users who are able to overcome the limitations of missing information about its psychometric qualities.

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NOTE: Portions of this review were abridged from the author's original review in the *Tenth Mental Measurements Yearbook* with permission of the Buros Institute.

USES General Aptitude Test Battery (GATB)/USES Interest Inventory (USES-II)

United State Employment Service (USES)

Western Assessment Research and Development Center
140 East Third South
Salt Lake City, UT 84111

Target Population: Work applicants, ages 16 to retirement.

Statement of the Purpose of the Instrument: The GATB measures vocational aptitudes of individual for vocational counseling and job applicant screening. The Interest Inventory measures interests which can be related to the *Guide for Occupational Exploration's* 12 interest areas (U.S. Department of Labor, 1979). Identification of aptitudes and interests provides a basis for focusing occupational exploration.

Titles of Subtests, Scales, Scores Provided: The GATB consists of 12 subtests which measure 9 aptitudes. The Interest Inventory measures magnitudes of 12 interest areas.

Forms and Levels Available, with Dates of Publication/Revision of Each: There are four forms of the GATB; A, B, C, and D. Form B is the only form available for use by approved organizations outside of the Employment Service network. Forms A and B, 1982. Forms C and D, 1983. Forms E and F are currently being developed. The Interest Inventory was released in 1981.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1982.

Languages in Which Available: The GATB is available in English and Spanish in the United States; English and French in Canada. The Interest Inventory is available in English and Spanish.

Time: GATB Actual Test Time: 48 minutes.
GATB Administration Time: 2 1/2 hours.
Interest Inventory: 20 minutes.

Norm Group(s) on Which Scores Are Based: GATB norms were based on samples from the general working population. (See GATB Manual, Section III: Development, U.S. Department of Labor, Washington, DC, 1970). Separate norms are available for 9th and 10th graders. The Interest Inventory norm group consisted of high school seniors, trade school and college students, out-of-school job applicants, employed workers, and adults in occupational training programs. Minorities and equal numbers of males and females from both urban and rural areas were included.

Manner in Which Results Are Reported for Individuals

Types of Scores: Standard GATB scores are given as related to distributions of scores for people

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working in occupational groups. Standard scores on all 9 aptitudes are calculated and can be related to 59 Occupational Aptitude Patterns (OAPs). OAPs are combinations of GATB aptitudes with associated cutting scores. The Interest Inventory also shows percentile ranks.

Report Format/Content

Basic Service: There is a GATB scoring service available when NCS or Intran answer sheets are used. The service includes converting raw scores to aptitude scores, matching aptitude scores with OAPs, and printing results on a Test Record Card.

Report Format/Content for Group Summaries

Options: Not available.

Scoring

Machine Scoring Service

Cost of basic service per counselee: For the GATB and the Interest Inventory is $0.75, and it takes three days. The Interest Inventory can be scored in one day at a cost of $0.95. Local machine scoring is not available outside the Employment Service network.

Cost of Options: none.

Time required for scoring and returning: 3 days.

Hand-Scoring

Scored by: The counselor can hand-score the GATB in about 20 minutes, the Interest Inventory in about 10 minutes.

Time required for scoring: 20 minutes.

Local Machine Scoring: Not available.

Computer Software Options Available: Not available

Cost of Materials

Specimen Set: (see below—no sample test available because of restrictions on test).

Counselee Materials: (see below).

Tests and Test Materials: The only form available to approved organizations outside the Employment Service network is FORM B. Book 1 (Parts 1–4), $3.75 each; Book 2 (Parts 5–7), $3.25 each; Part 8 (non reusable), $11.00 per pad of 100; Pegboards & pegs (Parts 9–10), $52.50 each; Finger Dexterity Board (Parts 11–12) $37.50 each; Form B answer sheets, $30.50 per 250. Interest Inventory, $18.00 per 100. Manual for USES Interest Inventory, $7.50 each.

For more information about materials available, order a free *Supply Catalog for USES Tests, Materials, and Other Publications* from Western Assessment Research and Development Center, c/o Utah Department of Employment Security, PO Box 11249, Salt Lake City, UT 84147.

Other Necessary Materials: Section 1, Administration and Scoring, Forms A & B, 1982, $12.00 each; *Dictionary of Occupational Titles*, 4th Edition. Revised 1991, (2 volumes) $40.00 set.

Additional Comments of Interest to Users: The GATB was developed by the United States Employment Service primarily for use by State Employment Service Agencies (SESA). Schools and other non-profit organizations which meet certain requirements may, at the option of the SESAs, be authorized to use the GATB for counseling or research. Inquiries must be directed to the appropriate SESA Testing Supervisor. Forms E and F and a Computer Adaptive GATB are currently being developed. The USES Interest Inventory is available to SESAs and other organizations approved by local SESAs.

Published Reviews:

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GENERAL APTITUDE TEST BATTERY

Description

The General Aptitude Test Battery (GATB) is the most extensively researched occupational aptitude test in existence. It serves as the aptitude measure in the U. S. Employment Service's comprehensive Counselee Assessment/Occupational Exploration System. First published in 1947, the GATB has been the central instrument in an ongoing program of validity research that has established linkages between aptitude scores and vocational proficiency for 97% of the nonsupervisory jobs in the U. S. labor market. The two other major components of the USES career assessment and exploration program are the USES Interest Inventory (reviewed below) and the *Guide for Occupational Exploration*. An overview of the USES testing system is provided by Droege (1987).

The GATB measures nine aptitude factors with eight paper-and-pencil tests and four apparatus tests. The 12 tests are: (1) Name comparison, (2) Computation, (3) Three-dimensional space, (4) Vocabulary, (5) Tool matching, (6) Arithmetic reasoning, (7) Form matching, (8) Mark making, (9) Place, (10) Turn, (11) Assemble, and 12) Disassemble. The nine aptitudes measured by weighted combinations of the tests are: General learning ability (G), Verbal aptitude (V), Numerical aptitude (N), Spatial aptitude (S), Form perception (P), Clerical perception (Q), Motor coordination (K), Finger dexterity (F), and Manual dexterity (M). The entire battery, which is available to nonprofit organizations through licensing agreements with the USES, can be administered to small groups of examinees by trained test administrators in about 2 1/4 hours. The GATB is a carefully standardized instrument with detailed directions for test administration. Both hand-scoring and machine-scoring options are available.

Use in Counseling

The GATB is the centerpiece of the most elaborate and detailed career assessment and exploration system available to counselors. Used in conjunction with the USES Interest Inventory (or the Interest Check List) and the *Guide for Occupational Exploration* (GOE), the counselor and counselee have access to the most thoroughly researched occupational data file ever assembled for the U. S. labor market. In addition to translating aptitude and interest profiles into potential occupations for the counselee to consider, the GOE and related documents provide data on a variety of critical job features, such as physical demands, working conditions, specific vocational preparation required, and mathematical and language skills needed.

There are two major approaches to translating the counselee's aptitude scores into information about suitable careers. The first bridge is the Occupational Aptitude Pattern (OAP) structure developed in the late 1970s. The 66 OAPs are sets of two to four critical aptitudes with cutting scores that designate three levels of qualification or suitability (high, medium, and low). Selection of the OAP aptitudes and cutoff scores was based on criterion correlations, test scores of workers, and the recommendations of job analysts. Because the GOE is organized into 12 interest areas (corresponding to the USES Interest Inventory scales) and subdivided into 66 work groups corresponding to the OAPs, the counselee's aptitude and interest profiles enable direct identification of possible career areas for further exploration.

The well-known problem with the OAPs is the multiple-cutoff approach, which does not allow for compensating aptitudes or provide differentiation within the three broad levels of qualification. This deficiency was solved with the development of the validity generalization approach to test validation, which established a statistical basis for converting GATB composite scores to percentile ranks for 179 job groups. It was demonstrated that most of the reliable, predictive variance in the GATB profile was captured by three composite aptitudes, Cognitive (GVN), Perceptual (SPQ), and Psychomotor (KFM). Percentile distributions for the optimally weighted combination of the three composites are given for 179 job groups that were developed by crossing five job families, reflecting level of job complexity, with the 66 GOE work groups (151 cells did not contain any occupations). The percentile norms provide a basis for comparing the counselee's composite scores with those of workers already in the occupations (U. S. Dept. of Labor, 1992).

An issue of special concern when using aptitude tests in career counseling with minority clients is fairness. A detailed study of four racial/ethnic groups (Asian-Americans, Hispanic Americans, African-Americans, and Native Americans) documented that the GATB is fair to minority examinees in that it accurately estimates their true abilities (i.e., job proficiency). In fact, the GATB actually tends to over-predict job performance of minority clients. A major factor in the GATB's fairness with minorities is the assessment of psychomotor aptitudes, which expands opportunities for the prediction of performance for a wider range of jobs.

Technical Considerations

The foundation of the GATB is a series of factor analytic studies involving more than 50 specific aptitude measures that were carried out in the 1940s. The final choices of the 12 tests selected to measure the nine aptitudes were based on both the factorial validity and the criterion validity of the tests. The normative basis of the GATB derives from large-scale investigations of occupational validity with adults and aptitude maturation in high school students that were conducted in the 1950s and 1960s. Norms for both the OAP and the validity generalization approach to test interpretation are available for ninth grade students, tenth grade students, and adults (including eleventh and twelfth grade students). The thorough analyses of these data are reported in detail in the GATB Development Manual (U. S. Dept. of Labor, 1970).

To be useful in career counseling, multiaptitude tests must produce scores that are reliable, i.e., internally consistent and stable over time and forms. The stability coefficients for adult examinees retested with parallel forms of the GATB at 1-week, 1-year, and 3-year intervals, averaged for the three scales that compose the composite scores, are: Cognitive (.91, .86, .88), Perceptual (.84, .78, .78), and Psychomotor (.83, .79, .79). Coefficients for high school students were slightly lower. Counselors should note that there is a small to moderate practice effect due to retesting: Cognitive (3 points), Perceptual (7 points), and Psychomotor (10 points). These practice effects are approximately the same magnitude as the standard errors of measurement of the GATB scales. GATB scores are converted to standard scores ($M = 100$, $SD = 20$).

The strongest evidence for the occupational validity of the GATB emerged from the validity generalization analysis of 515 validity studies conducted over a 35-year period. When occupations are organized into five families that represent levels of job complexity (Set-up jobs, Feeding-offbearing jobs, Professional and supervisory jobs, Skilled trades and clerical jobs, and Semi-skilled jobs), and the three composite aptitudes (Cognitive, Perceptual, and Psychomotor) are used as predictors of job proficiency, the resulting multiple correlations (corrected for criterion unreliability and restriction of aptitude range) are from .59 to .49, with an average of .53. It was observed that as job complexity decreases, the relative importance of Cognitive aptitude decreases, while the contribution of Psychomotor aptitude increases (see Hunter & Hunter, 1984).

Overall Critique

The GATB is the most extensively researched multiaptitude battery available for use in career assessment and occupational exploration. Four notable strengths of the GATB are: (1) The reliability and especially the stability of the aptitude scores are exceptional, although there is a small to moderate practice effect due to retesting; (2) validity generalization studies have demonstrated that the battery is a valid predictor of job performance for all jobs in the U. S. economy; (3) aptitude scores are translated directly into three levels of qualification for 66 work groups and composite percentile scores for 179 job groups; and (4) the battery assesses the aptitudes of racial/ethnic minority examinees fairly.

Two limitations should be mentioned. Because all tests are speeded, examinees with disabilities may be penalized unfairly. The GATB norms are about

30 years old. Even though there is no evidence that they are outdated, it would be a good idea to collect new normative samples for the purpose of adjusting OAP cutoff scores and "benchmark" (Marginal-25th%ile, Average-50th%ile, Exceptional-90th%ile) percentile scores. Readers interested in longer critiques of the GATB are referred to the reviews by Keesling (1983) and Kirnan and Geisinger (1986). The recent thorough examination sponsored by the National Research Council was more critical of the GATB (Hartigan & Wigdor, 1989).

USES INTEREST INVENTORY

Description

The United States Employment Service Interest Inventory (USES-II) is a self-report instrument that measures the respondent's relative strength of interests in 12 broad categories of occupational activity. The USES-II is a central component of the U. S. Department of Labor's Counselee Assessment/Occupational Exploration System. The 12 occupational interest areas constitute the primary organizing theme of the *Guide for Occupational Exploration* (GOE) (Maze, 1991).

All 12,000 occupations in the U. S. labor force were assigned to the 12 interest areas by occupational analysts using a standardized procedure. Because the occupations within each of the 12 interest areas are extremely heterogeneous with respect to educational and aptitude levels required, it was necessary to cluster occupations within interest categories. This task was accomplished by identifying 66 work groups, each with corresponding Occupational Aptitude Patterns (OAPs) that are measured by the General Aptitude Test Battery (GATB). Thus, each of the 66 work groups is characterized by a unique combination of interest preference *and* minimal aptitude requirement. (It should be noted that the USES-II's 12 interest areas are also embedded in the 179 job group classification structure described in the preceding GATB review.)

The USES-II consists of 162 items of three types: (1) job activity statements (e.g., guard airport security, sell life insurance, and conduct studies on economics), (2) occupational titles (e.g., biologist, dairy farmer, bookkeeper), and (3) life experiences (e.g., play a musical instrument, tour a tree nursery, teach surfboard riding). The examinee responds to each item using a 3-choice format: Like (L), Dislike (D), or Not Sure (?). Only the "Like" responses are counted as preferences in calculating interest area scores. The USES-II measures the relative strengths of the respondent's occupational interests in each of the following 12 areas: artistic, scientific, plants and animals, protective, mechanical, industrial, business detail, selling, accommodating, humanitarian, leading-influencing, and physical performing.

The USES-II should not be confused with another occupational interest instrument developed by the U. S. Department of Labor, the Interest Check List (ICL) (U. S. Department of Labor, 1979). The ICL contains 210 work activity statements keyed directly to the 66 GOE work groups. Although the ICL uses the same response format at the USES-II, there is no provision for calculating interest scores. Rather, the ICL was conceived as a counseling aid that would permit counselor-counselee exploration of specific expressions of occupational interests.

Use in Counseling

The USES-II was designed for use by career counselors working in institutional settings concerned with occupational exploration and career development of youth and adults. These settings include employment agencies, vocational rehabilitation facilities, high schools, and vocational-technical institutes. It is apparent from the brief description of the Counselee Assessment/Occupational Exploration System above that by itself, the USES-II would not be particularly helpful in facilitating vocational decision making. In almost all situations the GATB would have to be administered concurrently with the USES-II to make realistic use of the latter. For counselors who simply wish to encourage a counselee to use the GOE, with proper precautions, the ICL would be a helpful starting point.

The USES-II can be appropriately used with high school students and with the general adult population aged 16 years and above. The reading level required by the 162 items appears to be about third grade, but it would be easy to prepare an audiotape version for administration to poor readers. Administration of the USES-II to individuals or groups of examinees is a straightforward task that can be accomplished by a psychometric aide or trained secretary; completion time is estimated to be 15–20 minutes. Directions for administering and scoring the USES-II are detailed in the manual (Intran Corp., 1982).

Raw scores are translated into standard T-scores ($M = 50$, $SD = 10$) using a large, geographically and racially representative normative sample. Because there are substantial gender differences on several scales (e.g., males score higher on Mechanical and Physical Performing and females score higher on Business Detail and Humanitarian), percentile scores are calculated separately for male and female examinees using the corresponding segment of the normative sample. Thus, two sets of derived scores are generated for each counselee providing comparisons with the general population and with the same-sex population.

Technical Considerations

The USES-II is the product of a careful program of developmental research (Intran Corp., 1982). Factor analysis of 307 occupational activity items that covered all worker-trait groups in the third edition of the *Dictionary of Occupational Titles*, identified 11 interest factors. The factors were highly similar for males and females. To evaluate the comprehensiveness and usefulness of the 11 interest categories, occupational analysts allocated samples of occupations to the 11 areas defined by the factors by matching major job activities to the activities composing the interest factors. Results of this judgmental process demonstrated that the factors could provide the foundation for a functional occupational classification system. However, a small group of occupations in entertainment, recreation, and sports could not be allocated to any of the 11 categories, necessitating the addition of a twelfth area, Physical Performing, to complete the USES occupational interest system.

The USES-II was administered to 6,530 persons, half of whom were high school seniors, trade school, or college students. The remaining half were out-of-school job applicants, employed workers, or adults in occupational training programs. This sample, which includes African-American, Hispanic-American, Native-American, and Asian-American respondents and approximately equal numbers of males and females, constitutes the normative sample for the calculation of USES-II derived scores as described above. The USES-II was designed to meet the National Institute of Education's guidelines for sex fairness in interest inventories.

Internal consistency reliabilities for the 12 scales for a general sample ranged from .84 to .92, with a median of .88 and for a rehabilitation sample ranged from .75 to .87, with a median of .82. Retest reliabilities for a general sample (2-week interval) ranged from .81 to .92, with a median of .87 and for a rehabilitation sample ranged from .75 to .88, with a median of .83 (Bolton, 1988). A confirmatory factor analysis by Brookings and Bolton (1989) provided strong support for all 12 USES-II scales, but did not establish any statistical basis for a meaningful hierarchical arrangement of the scales, such as Holland's typology. The USES-II was found to be predictive of graduation from eight vocational training courses for male clients at a comprehensive rehabilitation center (Bolton, 1992).

Overall Critique

The USES-II is the only interest inventory designed to be used with the most thoroughly occupationally validated multiaptitude test available (the GATB) and is directly linked with an occupational exploration system that encompasses all jobs in the U. S. economy. Three specific strengths of the USES-II deserve special mention: (1) the psychometric foundation of the instrument is outstanding; (2) the excellent normative sample is representative of the entire U. S. labor force; and (3) used in conjunction with the GATB, it is an excellent career counseling tool.

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NOTE: Portions of the USES-II review were abridged from the author's original review in *Test Critiques: Volume III* with permission of Pro-Ed of Austin, TX.

Work Keys™ Assessments

American College Testing ACT

American College Testing (ACT)
2201 North Dodge Street, PO Box 168
Iowa City, IA 52243

Target Population: All persons in transition into or within the workforce. This includes those entering or reentering the workforce, and those changing jobs or functions within jobs.

Statement of the Purpose of the Instrument: Work Keys is a national system for teaching and assessing the skills needed to succeed in America's workplace. The array of Work Keys assessments can be used individually or in conjunction with two or more Work Keys assessments to document individuals' workplace skills. Work Keys assessments focus on generic employability skills and are coordinated with a job profiling component that makes it possible to compare on a common metric individuals' skills and skills required by the jobs. These assessments can also help guide employee training and career guidance services.

The Work Keys System has been in development. Seven assessments are operational: *Reading for Information, Applied Mathematics, Listening, Writing, Locating Information, Applied Technology*, and *Teamwork*. Additional assessments of the Work Keys System will be operational in September 1994. They include *Motivation, Learning, Observing*, and *Speaking*. All of the Work Keys assessments are criterion-referenced, the assessments are modular, allowing the user to select the assessments for their specific situations. Scores are based on the highest skill level achieved by an examinee. Work Keys provides two copies each of an individual report, a roster, and a group summary report.

Other components of the Work Keys System will be fully operational by 1995. They include the job-profiling component, an instructional support component, and a recording and reporting service component. For specifics about the numbers of forms and formats available for these assessments contact ACT.

Titles of Subtests, Scales, Scores Provided: Work Keys assessments are not a battery but rather a series of assessments that may be used in various combinations as appropriate for a given situation. *Reading for Information* (1992), *Applied Mathematics* (1992), *Listening* (1992), *Writing* (1992), *Locating Information* (1993), *Applied Technology* (1993), *Teamwork* (1993), and *Observation* (Fall 1994). Scores are provided that indicate the level of skill achieved by the examinee. The scores are based on a modified Guttman-scaling procedure with each level of skill being more complex than the one preceding it. The number of skill levels vary by assessment. For example, *Reading for Information* scores range from Level 3 to Level 7 and *Writing* scores range from Level 0 to Level 5.

Forms and Levels Available, with Dates of Publication/Revision of Each: There are three forms of *Reading for Information, Applied Mathematics, Listing*, and *Writing* and two forms of *Locating Information, Applied Technology*, and *Teamwork* available.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: Each assessment has its own technical manual.

Time: Actual Test Time: Each assessment is separately timed and most require 40–45 minutes to administer the test. *Teamwork* requires 80 minutes to administer parts 1 and 2.

Note: The standard answer document will accommodate up to 7 assessments and the UNIACT (ACT's interest inventory).

Norm Group(s) on Which Scores Are Based: The Work Keys assessments are criterion-referenced with respect to the level of skill they measure in each content area.

Manner in Which Results Are Reported for Individuals

Types of Scores:

Report Format/Content

Report Format/Content for Group Summaries

Basic Service: The following reports are part of the basic service: a multi-page narrative individual report, a roster report, a chart essay summary for sites with more than 20 examines (includes tables and graphics), a career guidance/counseling report for sites with more than 20 examinees, and reports for local items when used.

Scoring

Machine Scoring Service: Central scoring is conducted on a two-week turnaround basis. A rapid scoring service is available at extra cost.

Hand Scoring: Not available.

Local Machine Scoring: Local machine scoring and reporting is available.

Computer Software Options Available: Although not available at the time of press, both computer-administered and computer-adaptive versions of the objective assessments are under development.

Cost of Materials: Reading for Information ($3.25 per examinee), Applied Mathematics ($3.25 per examinee), Locating Information ($3.25 per examinee), Applied Technology ($3.25 per examinee), Teamwork Video Assessment ($6.00 per examinee), Observation Video Assessment ($6.00 per examinee), Listening and Writing (Audio) Performance ($14.75 per examinee). All materials are returned to the publisher.

Published Reviews:

None: new instrument.

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Reviewed By

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DESCRIPTION

Work Keys is a national outcomes-oriented system being developed by American College Testing (ACT) to teach and assess generic employability skills. The Work Keys System consists of four components: assessments, job profiling, curricular activities, and a performance reporting service (ACT, 1991, 1993b).

The ACT staff is developing the Work Keys System with the assistance of eight charter states, several hundred businesses, and four national professional education associations. The Work Keys System should be fully functional in school year 1995–96. It is expected that high schools, adult training institutions, and community colleges will choose to access the Work Keys System. In addition, local businesses will see Work Keys information as an avenue to hire, train, retrain, and promote employees on the basis of workplace skill requirements for job success.

This review focuses on the assessment component of the Work Keys System. The following seven assessments are ready for use during school year 1993–94: Applied Mathematics; Reading for Information; Listening and Writing; Teamwork; Applied Technology; and Locating Information. Additional assessments are scheduled for future release. Observing is scheduled for operational use in Fall 1994 with Learning, Motivation, Managing Resources, and Speaking to follow at a later date. Following is a description of the seven assessments currently available (ACT, 1992, 1993a).

Applied Mathematics (performance-based, objective assessment) measures the examinee's proficiency in setting up and solving problems using mathematical reasoning skills generally required in the workplace. Calculators are allowed, since they would be used on the job. A reference page provides formulas that may be used to complete the assessment. Questions increase in difficulty across five levels, and the higher levels incorporate skills used to solve problems at lower levels of difficulty.

Reading for Information (performance-based, objective assessment) measures the examinee's ability to read and understand work-related instructions and policies. Reading selections and questions based on the actual demands of the workplace appear in the form of memos, bulletins, notices, letters, policy manual excerpts, and governmental regulations. Each selection is followed by one to four multiple-choice questions that increase in difficulty at each of five levels.

Listening and Writing (performance-based, open-response assessment) measures two distinct but related skills: listening and writing. Both skills are presented in the same sets of stimuli just as they are frequently found in the workplace; however, each skill assessment can be scored separately. An audio tape containing directions and messages that are read by a variety of speakers is used. Each message is read twice, and time is given between readings for note-taking. Examinees are asked to compose and write their messages. The Listening score is based on the accuracy and completeness of the examinee's messages. The Writing score is based on how clearly each message is conveyed, whether the language is appropriate for a business setting and the particular situation, and whether the message contains errors in mechanics, sentence structure, or style.

Teamwork (performance-based, objective assessment) measures the degree of proficiency an examinee demonstrates in choosing behaviors and/or actions that simultaneously support team interrelationships and lead toward the accomplishment of work tasks. This assessment is administered via an audiovisual (VHS) tape and contains simple to complex simulated teamwork scenarios followed by multiple-choice questions to which the examinees respond.

Applied Technology (performance-based, objective assessment) measures the examinee's skills in solving problems of a technological nature. The content covers the basic principles of mechanics, electricity, fluid dynamics, and thermodynamics. This assessment focuses on workplace applications of skills and is oriented toward reasoning rather than mathematics. The emphasis is on identifying relevant aspects of problems, analyzing and ordering those aspects, and applying existing materials or methods to new situations.

Locating Information (performance-based, objective assessment) is designed to measure an examinee's skill in using graphic documents to insert, extract, and apply information. The documents used include diagrams, blueprints, floor plans, tables, forms, graphs, and instrument gauges. There are five levels of difficulty in the workplace application assessment. The difficulty is raised by increasing both the complexity of the information presented and the difficulty of the task required. In many cases, more than one document is presented.

USE IN COUNSELING

Information about performance on Work Keys assessments is designed to fit educational and training curricula that combine 21st century workplace skills with traditional academic skills. Many of these curricula have at least three "core" curriculum areas: personal skills, communication skills, and problem-solving skills. The Work Keys assessment components provide information about skills in these three areas and is flexible enough to meet many of the federal and state evaluation needs mandated by work-based learning initiatives, contract-training requirements, or skill-certification alternatives.

Work Keys can help educators prepare learners to make more informed choices about career options, connect learning and earning for students, strengthen active partnerships with local businesses, implement more hands-on instructional materials, and integrate applied learning into the curricula. Also, Work Keys can help businesses cut recruitment time and costs, reduce training costs, increase the number of skilled workers, analyze how well current employees' job skills match a company's future needs, and assist employees in clarifying the connection between education and work.

More than a single paper-and-pencil test administered at one point in time, Work Keys is a system that uses a variety of methods, instruments, and protocols for teaching and assessing employability skills. Because the Work Keys components are interactive, they can be used repeatedly to monitor an individual's attainment of personal, communication, and problem-solving skills and to document improvement in education and training programs. This flexibility could also make it possible to use Work Keys as a nationwide system in school-to-work transition programs. The following examples show how Work Keys components could be used.

Phase 1—Job Profiling. Employer determines the skill levels required for on-the-job performance. A medical supply company uses the Work Keys Job Profiling System to determine that their lab assistance job requires skills at Level 5 in Reading and Mathematics, and at Level 3 in Teamwork.

Phase 2—Assessments. Individuals take Work Keys assessments to determine how their skills compare to those required for the job being considered. An individual interested in the lab assistant job takes the following Work Keys assessments: Reading for Information, Applied Mathematics, and Teamwork, and demonstrates skill competencies at Level 5 in Reading and Teamwork and at Level 2 in Mathematics.

Phase 3—Curricular Activities. Individuals identify which of their skills exceed or match the requirements for the jobs they want and which skills need to be strengthened. In this way, Work Keys assessments can aid educators in the development of instructional support materials and strategies. The individual whose skill level does not match the requirements for lab assistant might choose to strengthen his or her deficient skills (in this case, mathematics) at a local community college or choose to apply for other jobs that are better matched to current skill levels.

Phase 4—Recording and Reporting. Businesses, educational institutions, agencies, and individuals exchange information on available jobs and the skill levels required for those jobs. The medical supply company uses Work Keys score report information to determine that a current employee has the skill levels needed to become a lab assistant and chooses to promote that individual instead of hiring the individual from outside the company who lacks the mathematical skills.

TECHNICAL CONSIDERATIONS

Work Keys assessments are criterion-referenced measures of generic employability skills. Because Work Keys scores are reported in levels, individuals using Work Keys can set personal goals for attainment, rather than having them predetermined by national norms. By comparing an individual's score report to the job profile that individual is preparing for, a decision can be made regarding appropriate skill level.

The current Work Keys assessments have internal consistencies (i.e., coefficient alphas) that range in the middle to upper 80s for selected-response assessments, based on 30 items for Applied Mathematics and Reading for Information. Studies of alternative-form reliability are planned for the fall of 1993 and the spring of 1994. The constructed-response assessments have generalizability coefficients in the .75 to .85 range for six audio prompts rated by two raters. The current Work Keys assessments have achieved remarkable Guttman coefficients, based on pretest data. The coefficient of reproducibility ranged from

.88 to .90 over the pretest forms of the selected-response assessments. The critical value for this coefficient is .90. The coefficient of scalability ranged from .56 to .61 with a suggested critical value of .60 (Vansickle, 1992; Vansickle & McLarty, 1993).

The current Work Keys assessments have undergone extensive content validity reviews as well as reviews for bias. Empirical studies are planned that will include: instructional sensitivity, program evaluation, and value-added uses. In addition, ACT is developing a job-profiling component that will provide evidence of the validity of the assessments for use in employment settings. This will include selection, placement and training.

The Work Keys assessment components are still in the development phases. The ACT has done a great deal to ensure that the content and uses of the Work Keys assessments meet or exceed various testing standards. However, the assessments are relatively new. In fact, many of the assessments will just be operational when this review is published. As such, several caveats must be stated. First, the empirical data on the first operational assessments is slim and needs to be expanded. For example, empirical studies of the validity of the assessments must be conducted. Second, although the internal consistencies and generalizability coefficients are satisfactory, other forms of reliability must be demonstrated including alternate-form and test-retest. Lastly, although much of the preliminary work on developing Guttman-scaled, criterion-referenced assessments is impressive, it remains to be seen if the final operational forms of some of the yet to be developed assessments will meet the standards set by Guttman and others (Stouffer et al., 1950).

OVERALL CRITIQUE

Work Keys has many strengths and many uses. For example, Work Keys provides a system for teaching and assessing employability skills that can be used to help individuals, regardless of age, to gauge the level of generic workplace skills they can demonstrate. It establishes a nationally recognized standard against which to assess generic employability skills and can be used to measure educational change in both pre/posttesting and program-end competency models. Work Keys also provides counselors and personnel directors with a tool to validate credentialing and encourage effective articulation among various learning environments. It has the potential to assist both educators and industrial trainers in the improvement of both instruction and learning.

While the Work Keys System has the potential to contribute much to the relationship between education and the workforce, it will take some time to determine if the system has fulfilled its potential. The job profiling services have been field tested and are ready for use in 1994, yet they cannot possibly cover all the jobs that a given individual might seek nor that industry might create as technology continues to demand new job descriptions. Also, as ACT continues to consider additional modes of assessment that go beyond the traditional large-scale assessments covered in this review (e.g., portfolios, computer-adaptive testing, and computer disk-interactive or digital video-interactive testing), schools may find future assessments cost-prohibitive.

Although the greatest value for both education and business will result when all the components of the Work Keys System are complete, the information that can be determined by the components currently available should be helpful to individuals, schools, training coordinators, and employers alike. Work Keys could provide a continuous structure for improving and documenting workplace skills from the time an individual begins to focus on workforce entry until retirement.

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World of Work Inventory (WOWI)

Robert Ripley
Revisions: John Hudson, Karen Hudson and Gregory Neidert

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Target Populations: High school through adult, including (but not limited to): vocational/technical students, college students, JTPA/JOBS program participants, vocational rehabilitation clients, employee outplacement, employee selection.

Statement of the Purpose of the Instrument: The *World of Work Inventory* was designed as a multidimensional, career/vocational assessment tool to provide individuals with objective information about their *task-relevant* interests, temperaments, and aptitudes in one integrated, comprehensive instrument. These measures are then synthesized to focus on occupations consistent with individuals' preference structures and aptitudes. The ultimate goal is to provide a person-job fit that will maximize individuals' job satisfaction.

Titles of Subtests, Scales, Scores Provided: Career Interest Activities (CIAs). There are 17 Career Areas from the *Dictionary of Occupational Titles*: Public Service, The Sciences, Engineering [illegible] Related, Business Relations, Managerial, The Arts, Clerical, Sales, Service, Primary Outdoor, Processing, Machine Work, Bench Work, Structural Work, Mechanical and Electrical Work, Graphic Arts, & Mining. **Job Satisfaction Indicators (JSIs).** There are the D.O.T. Temperaments from the Second Edition of the *Dictionary of Occupational Titles*: Versatile, Adaptable to Repetitive Work, Adaptable to Performing Under Specific Instructions, Dominant, Gregarious, Isolative, Influencing, Self-Controlled, Valuative, Objective, Subjective, & Rigorous. **Vocational Training Potentials (VTPs).** The six Aptitude/Achievement areas include: Verbal, Numerical, Abstractions, Spatial-Form, Mechanical/Electrical, and Clerical.

Forms and Levels Available, with Dates of Publication/Revision of Each: The *World of Work Inventory* is available in four versions. The **Standard Version** (written at the 8th grade level) was originally published in 1970. The **Modified Version** (written at the fifth grade level) was written for remedial readers, the deaf, and mentally handicapped. It was first published in 1978. The **Spanish Version** was originally released in 1976, while the **Australian Version** was first published in 1991. The latest revision of each version was in 1992.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1987.

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Languages in Which Available: English, Spanish

Time: Actual Test Time: Not timed.
Total Administration Time: Approximately two hours.

Norm Group(s) on Which Scores Are Based: The CIAs and JSIs **are not** norm-referenced; the scores represent the individual's degree of liking or disliking for the task-relevant items of each sub-scale. There is no attempt to standardize the scores or measure interest congruence with others in specific occupations. The VTP section provides information on where the individual stands in relation to peers of the same age and education level. The currently published (1993) norms for this comparison are derived from the scoring process (i.e., all *World of Work Inventory* answer sheets must be scored in our office, therefore we have a substantial database from which to draw—Current N = 80,000+).

Manner in Which Results Are Reported for Individuals

Types of Scores: All Scores are Raw Scores; VTP Raw Scores are converted to Graphical Format based on Mean and SD of Age & Education Peer Groups.

Report Format/Content

Basic Service: The Basic Report is two copies of a 11" X 17" Profile Report that presents the individual's scores in a graphical format. The Report also includes a summary section that lists the individual's choices of Best-Liked School Subjects, Self-Selected Career Choices, High-Measured Aptitudes, High-Measured Interests, and High-Measured Temperaments.

Options: In addition to the basic Profile Report, a 6–8 page Narrative Interpretation Summary is available as an option. There is a separate charge for the Narrative.

Report Format/Content for Group Summaries

Basic Service: For Groups of 100 or more, there is a Statistical Summary which consists of the group norms, and significance testing (e.g., testing for significant differences between two or more high schools in the same district). The norms are presented in the same format as the overall norms, and the significance tests are presented in tabular form.

Scoring

Machine Scoring Service

Cost of basic service per counselee: Scoring is included in the price of the answer sheet.

Hand-Scoring: Not available.

Local Machine Scoring: Not available.

Computer Software Options Available: Computerized adaptive administration.

Ways in which computer version differs: The **Orion Modem Scoring System (OMSS)** for the *World of Work Inventory* is designed for IBM and compatible computers. The system allows the individual to take the Inventory on the computer (which significantly reduces testing time) and provides immediate results (including Narrative) via modem.

Cost of Materials

Specimen Set: (Note: the prices listed below are for private, profit-making organizations, there is a *substantial* discount for non-profit organizations.) Pre-paid Answer Sheets (scoring & profile included): 1–9, $11.50 each; 10–49, $9.00 each; 50+, $7.50 each. Narrative Interpretation Summary: $10.00 each. Standard Test Booklet (reusable): 1–9, $5.25 each; 10–24, $5.00 each; 25–49, $4.75 each; 50+, $4.25 each. Modified Version Test Booklet: $5.00 each. Spanish Version Test Booklet: $5.00 each. Orion Modem Scoring System, Orion Software and Manual: $129.00. OMSS scoring costs for Standard Profile Version: 1–9, $13.80 each; 10–49, $10.80 each; 50+, $9.00. OMSS scoring costs for Deluxe Version (narrative included): 1–9, $25.80 each; 10–49, $22.80 each; 50+, $21.00. Interpretation Manual and Guide to Career Families: $19.95. Mini-Manual: $3.00. Instructional Cassette Tape: $14.95. Occupational Exploration Worksheets (per worksheet): $.15. Statistical Summary (analyses per 100 cases): $15.00. Preview Package: (in-

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cludes Inventory Booklet, 1 Answer Sheet, Interpretation Manual and Guide to Career Families, Mini-Manual, Occupational Exploration Worksheets, Instructional Cassette Tape, and Coupon for Narrative Summary): $27.95.

Counselee Materials: Answer Sheet, Narrative Coupon, Test Booklet (reusable), Occupational Exploration Worksheets.

Additional Comments of Interest to Users: Version 2.0 of the **Orion Modem Scoring System** was shipped in January 1993 and Version 3.0 will be released sometime in 1994. In addition, World of Work, Inc. will be publishing a Research Package for the *World of Work Inventory* in Spring 1994. A new edition of the *Interpretation Manual and Guide to Career Families* is slated to be published at the end of 1994.

Published Reviews:

Botterbusch, K. F. (1987). *Vocational assessment and evaluation systems: A comparison.* Stout, WI: Materials Development Center, Stout Vocational Rehabilitation Institute.

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DESCRIPTION

According to its manual, the World of Work Inventory (WOWI) is intended to measure a person's ``uniqueness related to specific tasks, worker trait characteristics, and desired life style. The purpose has been to define the specific jobs, roles, functions, and desirable job temperaments as related to specific occupations and not to persons presently employed in the occupations.'' (p. i) In other words, the WOWI identifies a person's occupational needs and relates these needs to specific occupations that might meet these needs. Although the system does contain short aptitude-ability tests, it appears that its main purpose is in determining the specific vocational interests and needs of individuals and occupational areas that can fulfill these needs.

The WOWI is designed for use with a wide range of persons: 8th through 12th grade students, community college and college students, persons in adult education, business and industry, vocational rehabilitation, and corrections.

The World of Work Inventory (WOWI) was developed by Robert E. Ripley and modified by Karen S. Hudson and Gregory P. M. Neidert of World of Work, Inc. Presently there are four versions of the WOWI: (a) the standard version, requiring about an eighth grade reading level, (b) the modified version, with an estimated fifth grade reading level, (c) a Spanish language version, and (d) an Australian English version. The manual contains information on when to use the standard version and when to use the modified version.

The philosophy underlying the WOWI was operationalized by developing a comprehensive measure that is based on the *Dictionary of Occupational Titles* and the *Occupational Outlook Handbook*. The total inventory consists of the four sections which are named and described below.

Identifying Information: Demographical data, self-identified occupational choices, and best-liked school subjects.

Career Interest Activities: Contains 238 items using a like-neutral-dislike scale to measure interests in the following 17 Basic Occupational Areas: Public Service, The Sciences, Engineering and Related, Business Relations, Managerial, The Arts, Clerical, Sales, Service, Primarily Outdoor, Processing, Machine Work, Bench Work, Structural Work, Mechanical and Electric Work, Graphic Arts, and Mining. These areas are taken mostly from the Occupational Divisions in the DOT's occupational group arrangement.

Vocational Training Potentials: The following four alternatives, multiple-choice aptitude-ability tests are administered: Verbal (28 items), Numerical (14) items, Mechanical-Electrical (14 items), Spatial (14 items), Abstractions (14 items), and Clerical (14 items).

Job Satisfaction Indicators: A total of 180 items using a like-neutral-dislike scale measure temperaments in the following areas: Versatile, Adaptable to Repetitive Work, Adaptable to Performing under Specific Instructions, Dominant, Gregarious, Isolative, Influencing, Self-Controlled, Valuative, Objective, Subjective, and Rigorous. All of these are directly related to the temperaments defined in the U.S. Department of Labor's *Handbook for Analyzing Jobs*.

USE IN COUNSELING

The WOWI is a pure power test, and thus, has no time limits. Administration time is reported as being between 45 and 230 minutes, with an average of about 2 hours. The test is self-administered and requires little training on the part of test administrators. The test can be administered in two general formats. First, a test booklet contains all the items and the person responds by marking a separate answer sheet. This answer sheet must be sent to the developer for scoring and interpretation. Second, the WOWI can be computer administered in two separate ways: (a) via interactive modem, and (b) using a stand-alone disk. The advantage of the stand-alone disk administration is that the WOWI can be administered anywhere a computer is available. In computer administration, the test items containing graphic material (e.g., Abstract Reasoning) or illustrations (e.g., Electrical Mechanical) are still presented in test booklets and *NOT* on the computer screen. This requires the consumer to constantly move his/her eyes between the booklet and the computer screen.

Regardless of the administration method, the client receives the computer-generated report which contains the following information:

Demographic Information such as gender, age, and educational level is provided.

Career Interest Families are presented in graphic format with 17 scores. Each interest is presented on a scale from −60 to +60, with 0 as a neutral point. The percentage of like, neutral, and dislike responses are given.

Job Satisfaction Indicators are presented in a graphic format ranging from −60 to +60 with 0 as a mid-point. The percentages of like, neutral, and dislike responses are also given.

Vocational Training Potential presents the raw scores and a graph of each raw score as compared to the most relevant norm group.

Summary contains personal occupational choices, best-liked school subjects, high-measured vocational training potentials, and high-measured job satisfaction indicators.

In addition, the client can also receive a narrative report that provides a "canned" interpretation of the results. Most clients will find this report easy to read and understand. The report is designed to be self-explanatory. Hand-scoring is not available.

The WOWI has two manuals. The *Interpretation Manual and Guide to Career Families* contains general information on use of the WOWI and detailed information of the interpretation process needed to relate the test scores in the 17 Career Families to specific occupational sub-groups within each Career Family. For example, the Public Service Career Family contains 12 sub-groups, including: Education, Religion and Theology, Physicians and Related, Nursing, and Mortician Service. This manual is easy to follow and is well-written. In addition, an audio tape is also available to aid in interpretation.

The second manual contains information on the computer and modem administration of the instrument. The detailed, yet simple, instructions in this manual make it easy to read and understand, especially for persons who are not familiar with the use of on-line services.

TECHNICAL CONSIDERATIONS

The WOWI contains normative information based a total of over 65,000 persons (35,000 females and 30,000 males). Separate sample sizes, means, and standard deviations are given for education levels ranging between 4 and over 17 years of formal education. Sample sizes range between 22 and 25,800 (grade 12). Age level norms are given in two-year increments for persons ranging from age 14 to age 66. Because the test is computer-scored, the normative base is constantly updated. However, not enough information is presented in that manual to be able to judge if these norms are representative of specific groups. Also, the manual does not provide information on how these normative data were collected. It appears that these "norms" are simply the scores of the persons taking the WOWI over a specific period of time. Thus, sampling methodologies were replaced by convenience.

When this reviewer received the WOWI materials, he was informed that a new technical manual was being prepared, but was not yet available. Therefore, there was no current information on technical aspects of the WOWI. However, reviews of the earlier editions of the test by Locke (1982) and Botterbusch (1987) reported that reliability was presented in alpha coefficients, Spearman-Brown split-half's, and standard errors of the measurement. Individual scale alphas ranged from .24 to .94; most of which were in the 80s. Locke (1982) pointed out that there was no information on test-retest reliability and that this was a serious problem.

Locke (1982), Botterbusch (1987), and Layton (1988) expressed serious concerns with the WOWI's lack of both predictive and concurrent validity. Layton (1988) stated that "Little evidence of validity is given in the manual of interpretation. . . . From an examination of the data one can only conclude that evidence for validity is meager and weak" (p. 225). Because of this lack of current reliability and validity information, potential users are urged to obtain this information before purchasing or using this instrument.

OVERALL CRITIQUE

The WOWI is designed to provide an assessment of three major considerations in vocational counseling, planning, and career decision making: interests (Career Interest Indicators), aptitudes-abilities, and temperaments (Job Satisfaction Indicators). Combining these three types of information into one system is the greatest accomplishment of the system's developers. With this information the "DOT becomes useful in further exploration of the career families" (Locke, 1982, p. 145).

Useful with a wide variety of persons, the WOWI is perhaps best used at the beginning of vocational counseling or vocational evaluation as a screening device. Here it can provide a quick measure of interests, temperaments, and aptitudes-abilities. Results need to be followed by additional counseling, testing, and occupational exploration. While the Career Interest Indicators and Job Satisfaction Indicators provide for an in-depth measure of these variables, this reviewer had serious questions about the usefulness of the aptitude-ability measures. These five tests contain very few items and apparently their difficulty level increases very rapidly. Therefore, in practice it is suggested that any results on the part of the WOWI be confirmed by additional testing that is appropriate to the client.

In conclusion, the WOWI has potential as a screening device and as a method of providing insight into the client's vocational interests and needs both for counselor and client. However, results on the aptitude-ability portion need to be confirmed with other devices and additional reliability and validity data for the entire instrument need to be provided.

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CHAPTER VII

Interest Inventories

Campbell Interest and Skill Survey™ (CISS™)

David P. Campbell

NCS Assessments
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Target Population: High schools, colleges and universities, human resource departments, adults seeking career guidance, and placement firms. Individuals pursuing occupations that require college degrees.

Statement of the Purpose of the Instrument: The CISS helps professional counselors obtain more complete career assessment information by providing an integrated measure of self-assessed interests and skills. The interest scale reflects individual attraction for specific occupational areas. The skill scale provides an estimate of individual confidence in his/her ability to perform various occupational activities.

Titles of Subtests, Scales, Scores Provided: 7 orientation scales (influencing, organizing, helping, creating, analyzing, producing, and adventuring), 29 basic scales (e.g., leadership, supervision, counseling, and international activities), 58 occupational scales (e.g., financial planner, translator/interpreter, and landscape architect).

Forms and Levels Available, with Dates of Publication/Revision of Each: one form. Published 1992.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: CISS Manual, 1992.

Languages in Which Available: English.

Time: Actual Test Time: 35–45 minutes.
Total Administration Time: 35–45 minutes.

Norm Group(s) on Which Scores Are Based: Scales were standardized using a reference sample of 5,225 employed men and women representing a wide array of occupations.

Manner in Which Results Are Reported for Individuals

Types of Scores: Standard scores presented numerically and graphically. Verbal labels describing interest/skill patterns.

Report Format/Content

Basic Service: Profile report with narrative text. The profile presents the scores graphically on each scale and follows with narrative text describing the scale and the individual's scores.

Options: None at this time.

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service

Cost of basic service per counselee: Mail In Report: $5.40+—$4.50 each depending on the quantity purchased. Includes answer sheet, scoring and report.

Cost of Options: Not available.

Time required for scoring and returning: 24 hour turnaround.

Hand-Scoring: Not available.

Local Machine Scoring:

Provisions/conditions/equipment required: IBM® or IBM-compatible computer with 386 or higher processor, Microsoft® Windows™, post-script laser printer and MICROTEST Q™ software. Provides immediate on-site scoring and reports. IBM is a registered trademark of International Business Machines. Microsoft is a registered trademark and Windows is a trademark of Microsoft Corporation.

Computer Software Options Available: Not available.

Cost of Materials

Specimen Set: Includes manual and three mail-in report answer sheets. Cost: $35.00. Softcover Manual $20.00.

Counselee Materials: Profile: Qty 5–49—$5.40 each, 50–99—$5.10 each, 100–249—$4.80, 250+—$4.50. (Includes answer sheet, scoring and report.)

Published Reviews: New instrument.

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DESCRIPTION

The manual for the Campbell Interest and Skill Survey (CISS) (Campbell, 1992a) has only recently been published. However, the distinguished history of its author in the measurement of career interests dates back to the late 1950s and will likely be known to most users of the CISS, particularly via his long-term involvement with the Strong-Campbell Interest Inventory (SCII) (Hansen

& Campbell, 1985). Some description of the evolution of Dr. Campbell's previous involvement with the SCII (now the Strong Interest Inventory) and subsequent development of the CISS is referenced in the CISS manual, and additional information is available elsewhere (Campbell, 1992b). It is clear that the substantial methodological knowledge regarding career interest measurement acquired over the last 35 years has been effectively employed in the development of the CISS.

The CISS is a 320-item instrument designed to facilitate exploration of self-reported career interests and skills. It contains seven Orientation Scales, 29 pairs of Basic Interest and Skill Scales, and 58 Occupational Scales. The Orientation Scales roughly correspond to Holland's six occupational types, with the notable exception that his Realistic type is subdivided into two CISS Orientations, Producing and Adventuring. All seven Orientation Scales are labeled in verb form to capture the essence of the Orientations. The Basic Scales, described as subscales of the Orientation Scales, represent various occupational activities, for example, Sales, Public Speaking, and Performing Arts. As noted above, there are 29 pairs of Basic Scales, with each pair consisting of an interest and a skill scale. The Occupational Scales include a wide range of occupations, and scores reflect the degree of similarity of an individual's interests and skills with those of specific occupational groups. Both interest and skill scores are reported for all three groups of scales on a CISS profile. Scores on the skill scales are said to be indicators of the respondents' self-confidence in their ability to perform specified tasks/activities. The inclusion of skill scales on the CISS represents a significant innovation that permits exploration of career interests in conjunction with closely related skills. The CISS includes two Special Scales, Academic Focus, which assesses attraction to academic environments, and Extraversion which, assesses interest and confidence in working with others vs working alone. Two additional Special Scales measure variability of interests and variability of skills. However, these latter two scales are experimental in that their uses have not been fully explicated.

The CISS items are presented in two sections. Part I (200 items) assesses interests and contains three types of items. The first type consists of occupations, each accompanied by a brief descriptive phrase, for example, "A trial lawyer, arguing cases in court." The second type consists of school subjects, for example, "Mathematics." The third type describes particular activities, for example, "Organize a political campaign." For all three groups of items, respondents indicate their interest on a 6-point scale ranging from strongly positive to strongly negative. Part II contains 120 items representing specific career skills, for example, "Investing money for profit." Respondents indicate their skill level for each activity on a 6-point scale ranging from "Expert" to "None." The use of a 6-point scale eliminates the opportunity for neutral responses while permitting greater variability in respondents' degree of endorsement of items.

USES IN COUNSELING

The CISS was designed primarily to facilitate career exploration by individual clients. However, the manual also describes methods for applications in group formats. The profile reports for the CISS contain a wealth of information to enhance exploration in career counseling. The inclusion of self-reported skills on the CISS offers an expanded approach to career exploration. The practical utility of this approach is best demonstrated in a classification schema represented on the profile as four quadrants reflecting different patterns of relationship between interest scores and skill scores. These four quadrants reflect the following interest and skill combinations: (a) high skills, high interests; (b) lower skills, high interests; (c) high skills, lower interests; and (d) lower skills, lower interests. Based on the relationships between a person's interest and skill scores, the CISS profile suggests different career development strategies including Pursue, Develop, Explore, and Avoid, respectively. While further investigation of the validity and utility of these self-reported skills in career development is needed, they provide rich stimuli for exploration in career counseling.

The normative data summarized in the CISS manual is more than adequate for the average user. Counselors experienced in the use of other interest measures will adapt easily to the CISS. While the manual is rather complex, it is quite thorough in providing the information necessary for competent interpretation. The manual also includes several valuable teaching tools such as sample profiles and transparency masters.

TECHNICAL CONSIDERATIONS

The complexity of the CISS is such that evaluation of its technical qualities will continue for many years. In fact, intensive study of the CISS manual and the various procedures employed in scale development would be an appropriate component of a doctoral seminar in psychometric theory. While one might disagree with specific choices made in selecting among various scale construction strategies, in general, the development of scales on the CISS accurately reflects the state-of-the-art methodology for construction of such instruments.

For the Orientation Scales and the Basic Scales, norms were established using a General Reference Sample, a group comprised of 1,790 women and 3,435 men representing 65 different occupations. Rather than establishing separate-sex norms, scores for men and women were combined in a manner that provided equal weighting to each sex. In creating the Occupational Scales, the decision was made to report unisex norms in order to facilitate ease of interpretation. This decision will inevitably create some debate, given that evidence generally suggests that men and women report somewhat different patterns of interests. The rationale for using unisex norms and the procedures followed in their development are clearly articulated in the manual. Preliminary analyses comparing the differential impact of separate-sex vs combined-sex scales for eight occupations on the CISS appear to support the use of unisex norms. However, more thorough examination of gender differences across the 58 Occupational Scales is clearly warranted. To its credit, the manual provides mean scale scores for men and women in the occupational samples on both interest and skill scales. Ultimately, the added convenience of unisex norms must be evaluated against potential limitations they might impose on effective assessment and application of results.

Reliabilities of the CISS scales are thoroughly reported and generally appear adequate for the purposes intended. Although the complex scale structure prohibits a full description of these data, they can be summarized by reporting median coefficients. The median coefficient alpha for both the interest and skill scales of the Orientation Scales was .87, and the test-retest coefficients over a three-month interval were .87 and .81, respectively. The 29 Basic Scales measuring interests had a median coefficient alpha of .86 and a median test-retest coefficient of .83 for a three-month interval. Both the median coefficient alpha and the median test-retest coefficient for the Basic Scales measuring skills were .79. The median test-retest reliability coefficient for the 58 Occupational Scales was .87 for interests and .79 for skills. The general tendency for skill scales to demonstrate less reliability than interest scales is noteworthy.

A factor analysis of the interest scales comprising the Basic Scales generally supports the structure of the seven Orientation Scales. Patterns of correlations among subscales provide further support for the use of the seven Orientation Scales, as do analyses of mean scores for the 58 occupational samples. Similarly, correlations among the Basic Scales measuring skills reflect positively on the validity of these scales. Perhaps more importantly, the mean scores for the occupational samples tend to behave as expected for the Basic Scales measuring interests and skills. Generally positive support for the validity of the Occupational Scales is evident in the correlations of these scales with the Orientation Scales and in mean differences between occupational samples and the General Reference Sample. Although the Occupational Scales were developed to minimize male-female differences, certain patterns of gender differences persist nevertheless. Test-retest reliabilities and construct validity indicators for both the Academic Focus and Extraversion scales as reported in the manual seem adequate for their intended use.

OVERALL CRITIQUE

The CISS appears to represent a well-developed, adequately tested, and user-friendly instrument for the purposes of career exploration. Its inclusion of scales designed to measure self-reported skills as a supplement to career interests is a useful and interesting development with much promise. The extent of this promise, however, will only be revealed following substantial clinical experience and disciplined scientific examination. Two clear strengths of the CISS include the comprehensive individual profile provided and the wealth of interpretive information available in the manual. The psychometric properties of the instrument are thoroughly reported in the manual and generally provide an impressive basis for the use of the instrument in exploration and counseling applications. Two interesting features of items comprising the CISS include the use of 6-point response scales and the pairing of specific occupations with descriptive phrases which seems to reduce the ambiguity of the items as stimuli.

Although the CISS seems destined to become popular in both practice and research, important questions regarding the instrument must yet be addressed. The use of unisex norms for the Occupational Scales will require further examination. The relationship of the Orientation Scales to Holland's types needs further definition for the practitioner. The role of self-reported skills in effective career development must be more precisely defined. Additionally, the relationship of self-reported skills to actual skill levels requires study. The apparent assumption that higher skill levels are as important as interests in determining successful career development outcomes also needs to be investigated. Finally, the relationship of the CISS to other measures of these constructs needs to be explicated.

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Career Assessment Inventory—Enhanced Version and Vocational Version (CAI-EV/CAI-VV)

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Target Population: High schools, 2- & 4-year colleges, human resource departments and vocational rehabilitation programs.

Statement of the Purpose of the Instrument: The Career Assessment Inventories (both versions) are interest inventories designed to measure one's occupational interests for use in career exploration and career decision-making. The Enhanced Version provides a mixture of occupations that require various amounts of post-secondary education. Vocational Version focuses on occupations requiring 0–2 years of post-secondary education.

Titles of Subtests, Scales, Scores Provided: Enhanced Version: 6 General Occupational Themes, 25 Basic Interest Scales, 111 Occupational Scales, Administrative indices and 4 non-occupational scales. Vocational Version: 6 General Occupational Themes, 22 Basic Interest Scales, 91 Occupational Scales, Administrative indices and 4 non-occupational scales.

Forms and Levels Available, with Dates of Publication/Revision of Each: Enhanced Version: 1 form, published 1986. Vocational Version: 1 form, published 1978, revised in 1980, 1982, 1984.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: Enhanced Version 1986. Vocational Version 1984.

Languages in Which Available: Enhanced Version: English and Spanish. Vocational Version: English, Spanish, French.

Time: Actual Test Time: 30–40 minutes.
Total Administration Time: 30–40 minutes.

Norm Group(s) on Which Scores Are Based: Enhanced Version: General Theme Scales based on a normative sample of 900 employed adults. Norms for the Occupational Scales were developed by scoring occupational subgroup samples independently. Vocational Version: General Theme Scales based on a normative sample of 1500 employed adults. Norms for the Occupational Scales were developed by scoring occupational subgroup samples independently.

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Manner in Which Results Are Reported for Individuals

Types of Scores: Both Versions—Standard scores and percent response.

Report Format/Content

Basic Service: Both Versions. Profile report graphically presents the scores on each scale. Reverse side has preprinted interpretive information. Report is provided in duplicate.

Options: Both Versions. Interpretive report presents several pages of narrative statements that explain the individual's scores on the scales. It also provides page number references to the Occupational Outlook Handbook for the highest occupational scores. Includes a three-page detachable counselor's summary.

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service

Cost of basic service per counselee: Enhanced and Vocational Versions. Profile Report: $5.15—$4.50 each depending on quantity purchased. Includes answer sheet, scoring and report.

Cost of Options: Enhanced and Vocational Versions. Interpretive Report: $8.00—$6.60 each depending on quantity purchased. Includes answer sheet, scoring and report.

Time required for scoring and returning: 24 hour turnaround.

Hand-Scoring: Not available.

Local Machine Scoring:

Provisions/conditions/equipment required: IBM® or IBM-compatible computer with 386 or higher processor, Microsoft® Windows™, laser printer and MICROTEST Q™ software. Provides immediate on-site scoring and reports. IBM is a registered trademark of International Business Machines. Microsoft is a registered trademark and Windows is a trademark of Microsoft Corporation.

Computer Software Options Available: Not available.

Cost of Materials: Enhanced Version and Vocational Version.

Specimen Set: Includes manual and three mail-in interpretive report answer sheets. Cost: $37.50. Enhanced Version Manual $18.00. Vocational Version Manual $18.00.

Counselee Materials: Profile: Qty 5–49—$5.15 each, 50–99—$4.95 each, 100–249—$4.75, 250+—$4.50. (Includes answer sheet, scoring and report.) Interpretive: Qty 5–9$8.00 each, 10–49—$7.65 each, 50–99—$7.30 each, 100–249—$6.95 each, 250 +—$6.60 each. (Includes answer sheet, scoring and report.)

Published Reviews:

Bodden, J. (1978). Review of the Career Assessment Inventory. In O. K. Buros (Ed.), *Eighth mental measurement yearbook*. Highland Park, NJ: Gryphon Press.

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DESCRIPTION

The similar names of the Career Assessment Inventory—The Enhanced Version (CAI-EV) and the Career Assessment Inventory—The Vocational Version (CAI-VV), the commonality of their manuals, and (to a lesser extent) their similar appearance are likely to form a confusing impression for users of these two career assessment inventories. The CAI-VV, which is the older of the two instruments, is designed to be used by counselors and other educators who work with: (a) non-college-bound students, (b) adults who are seeking immediate career entry, and/or (c) individuals who are interested in work requiring limited post-secondary education. In essence, the CAI-VV is intended for use with individuals who are seeking careers that do not require a baccalaureate degree. In a previous review, the CAI-VV was described as a “blue collar version” of the Strong Interest Inventory (Bodden, 1978, p. 993). The CAI-EV, in contrast, is designed for more professionally oriented occupations (i.e., for use with individual high-school students who are planning to attend college or with college students). The CAI-EV is intended to be “more universally applicable” than the CAI-VV; it covers a broader scope of the world of work than the CAI-VV through additional items that include professional career interests.

Both the CAI-VV and CAI-EV have three categories of scales (i.e., General Theme scales, Basic Interest Area scales, and Occupational scales), reflecting the influence of several other measures (e.g., Minnesota Vocational Interest Inventory, Kuder and Strong series, and Holland types) in their development. However, the CAI-EV, compared with the CAI-VV, includes: (a) a 25% increase in item coverage of the six General Theme scales; (b) five additional Basic Interest Area scales (25 total scales) while two others were deleted; and (c) 22 new Occupational scales, increasing the number to 111. Thus, the CAI-EV has wider applicability within a greater occupational spectrum, thereby involving more professional careers. The National Computer Systems Technical Assistance Center reported that the CAI-VV and the CAI-EV should be viewed on a continuum with the CAI-VV being vocationally oriented and the overlapping CAI-EV being directed more toward advanced education (K. Anderson, personal communication, December 21, 1992). The CAI-EV has a broader application to a more diverse sample of individuals.

Both versions of the CAI are comprised of only one form for both males and females, with the CAI-EV containing 370 items and the CAI-VV containing 305 items. Considerable overlap exists among items between the two versions although there are small differences with some of the common items (e.g., CAI-VV: "Help campaign for a politician" versus CAI-EV: "Campaign for a politician," and CAI-VV: "Repair adding machines" versus CAI-EV: "Repair electrical equipment"). For both versions, test takers respond to items by selecting one of the following five alternatives: Like Very Much, Like Somewhat, Indifferent, Dislike Somewhat, or Dislike Very Much. On average, the CAI-VV can be completed in approximately 30 minutes, although it appears that additional time would be needed by adolescents or individuals with reading problems. The CAI-EV requires approximately 40 minutes to administer. Both versions are scored by machine format only.

USE IN COUNSELING

As with most career assessment instruments, counselors should not place too much emphasis on the specific career predictions provided by the CAI. Rather, counselors should use both versions as "vehicles" in the counseling process to assist clients to formulate general career planning strategies. Client resistance to the assessment process should be minimal with the CAI because the organization format for each version and the scoring profiles for the test taker (Narrative Scoring Report) and the counselor (Counselor's Summary) are attractive and appealing. The main subsections include General Theme Scales (Holland's six types), Basic Interest Area Scales (developed using the organization of Holland's topology), and the Occupational Scales. The narrative report includes information about occupations as well as page numbers in the *Occupational Outlook Handbook* and the *Dictionary of Occupational Titles* for the test taker's and practitioner's reference. A noteworthy inclusion is the recommended additional information at the end of the narrative which also suggests that the examinee consult a professional counselor.

Although the CAI-VV and CAI-EV manuals include illustrative score reports and informative interpretative information, McCabe (1988) reported that interpretation of the CAI scores requires the practitioner to obtain solid training and a good theoretical base in occupational information dissemination. Also, while both manuals are functional for obtaining knowledge concerning the interpretation of scores, they would be enhanced if the interpretive information was separated from the instrument's development procedures and data. Each manual indicates that the respective version of the CAI can be used for employment selection, but no evidence is presented to support this assertion. Accordingly, counselors should be careful to avoid making claims concerning selection when no evidence exists to support this use.

TECHNICAL CONSIDERATIONS

The reading levels for the CAI-VV and the CAI-EV have been reported to be at the sixth and eighth grades, respectively. However, the manual for the CAI-EV recommends that the instrument be used beginning with ninth-grade students due to younger examinees' potential lack of familiarity with some of the activities and school subjects. Unfortunately, the manuals do not report the reading level of the Narrative Scoring Report which the test taker receives.

Both manuals are well organized and easy to read. Each includes technical information, interpretative guidelines, and two case studies. However, norming data and information supporting the instrument's validity are not as clear as other technical aspects of the instrument. Much of the relevant data in each manual need updating; some of the empirical information presented reflects work done in the mid-seventies. It is also unfortunate that each manual does not use a standardized readability index to document the reading levels for both the inventory and the narrative-scoring report, since sensitivity to reading level was an important component in the construction and merchandising of each inventory.

The major focus of the technical presentation for the CAI-VV is scale construction; lacking is adequate information supporting its predictive validity. Although the CAI-VV has been in existence for approximately a decade, the manual is devoid of reported studies concerning its examination. If focus was directed toward reporting evidence of the value of the CAI-VV in helping clients find highly satisfying occupations (i.e., prediction), there could be greater confidence in the instrument. Test-retest reliability coefficients for the non-occupational scales with relatively small groups of subjects (N ranges from 25–77) have demonstrated reasonably good stability over time. On average, 4–5 year test-retest reliability coefficients among adult samples were .83 (range = .74 to .92). The non-occupational scales reliabilities, in mean hierarchical order from most to least reliable, are Fine Arts-Mechanical, Educational Orientation, Extroversion-Introversion, and Variability of Interests. Test-retest reliabilities for the six General Theme scales ranged from .80 (4–5 year interval) to .94 (one-week interval). Content, construct, and concurrent validity information is available for the six General Theme scales, the Basic Interest Areas scales, and Occupational scales. Validity information for the non-occupational scales is not reported. Because the technical information has not changed appreciatively since the Inventory's development, the reader is directed to earlier reviews (Bodden, 1978; Lohnes, 1982) for additional comments concerning reliability and validity data.

The CAI-EV technical data are built on the CAI-VV data base with additional data and analyses to address the change in focus to more professionally oriented clients. Scale efficacy for the General Theme scales was established by utilizing content, construct, and concurrent validity. Content validity was achieved by inter-scale correlations, and concurrent validity was achieved through correlations with inventories having similar types of scales. Construct validity was established empirically by observing whether the mean scores of a variety of occupational samples were distributed in a meaningful and logical order. Although each General Theme scale covers a broad range of interests, test-retest reliabilities were in the .90s (for up to 30 days).

Concurrent validity coefficients for the Basic Interest Area scales were generally in the .70s and .80s with a few exceptions in the .60s when compared with similarly named scales on the Strong Interest Inventory. However, correlations of a lower magnitude were reported for the Kuder and the Jackson Vocational Interest Survey. Test-retest reliability coefficients for the Basic Interest Areas scales for intervals of 30 days or less have been observed in the .90s.

Concurrent validity was evidenced for the Occupational scales by correlations with similar scales, especially the Strong Interest Inventory and the Kuder. There was moderately good to high consistency between inventories. Test-retest reliability coefficients for the Occupational scales for short-term intervals and longer-term intervals were in the .90s and .80s, respectively.

As with the CAI-VV, information supporting the predictive validity of the CAI-EV is not provided. It would be beneficial if greater focus was directed toward demonstrating that the CAI-EV has been successful in assisting individuals to find satisfying occupations (i.e., prediction). For an additional analysis of the psychometric properties of the Enhanced Version, the reader is directed to McCabe (1988) and Rounds (1989).

COMPUTER-BASED VERSION

Computer-based versions of the CAI-VV and CAI-EV (i.e., Microtest System) are available from the publisher and provide the user with interactive testing and a test profile report. The purchaser pays an initial "set-up" fee and a per-test usage fee. A toll-free number is available to the user for assistance with installing, and training support for the Microtest System is available to the user. As with most computer-based versions of a test, the CAI-VV and CAI-EV manuals do not provide any data attesting that the two forms (computer and paper-and-pencil) of the instrument share the same psychometric properties.

OVERALL CRITIQUE

In summary, the CAI-VV and CAI-EV have merit. The CAI-VV addresses a population for which comprehensive instruments are needed, whereas the CAI-EV includes more professional occupations and offers added features. The items and manual for both versions are presented in gender-neutral terms. It is difficult, however, to judge some of the psychometric aspects of the inventories adequately due to insufficient information. The noticeable small number of cases used in the development of some of the Occupational scales is of concern. Also, of questionable value is the construction of the Themes scales by choosing the items "rationally" or "by inspection" rather than empirically demonstrating that the Themes adequately reflect the hexagonal model of Holland.

Use of the CAI-VV and CAI-EV with their intended populations to assist clients with career exploration and self-understanding seems warranted. However, their cost and the time needed for appropriate interpretation precludes using them with large groups. Of value to counselors is the toll-free number provided by the publisher to assist counselors with product information and specific test reports.

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NOTE: Portions of this review were abridged from the first author's original review in the *Eleventh Mental Measurements Yearbook* with permission of the Buros Institute.

Career Directions Inventory (CDI)

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Target Population: High school, college and university students and adults.

Statement of the Purpose of the Instrument: The CDI was developed to assist high school and college students in educational and career planning. As well, it is useful for adults making career change decisions. Items were carefully selected to be easy in content and vocabulary. Emphasis placed on service and technical occupations and others NOT requiring a university education.

Titles of Subtests, Scales, Scores Provided: 7 General Occupational Themes. 15 Basic Interest Scales: Administration, Art, Clerical, Food Service, Industrial Arts, Health Service, Outdoors, Personal Service, Sales, Science and Technology, Teaching/Social Service, Writing, Assertive, Persuasive and Systematic.

Forms and Levels Available, with Dates of Publication/Revision of Each: 1986.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1986.

Languages in Which Available: English, French.

Time: Actual Test Time: 30–45 minutes.
Total Administration Time: 30–45 minutes.

Norm Group(s) on Which Scores Are Based: High school and college.

Manner in Which Results Are Reported for Individuals

Types of Scores: Percentile ranks, standard scores, similarity coefficients and rankings.

Report Format/Content

Basic Service: The CDI Extended Report includes a basic interest profile, a profile for seven general occupational themes, scores of similarity to 22 broad occupational clusters with narrative summaries of the three most similar clusters, sample occupations, D.O.T. codes and a lengthy profile of similarity to over 100 educational/occupational groups.

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service

Cost of basic service per counselee: $7.60 each report to as low as $4.90 with quantity discount.

Time required for scoring and returning: 48 hours plus mail time.

Hand-Scoring: Not available.

Local Machine Scoring:

Provisions/conditions/equipment required: NCS or Scantron and IBM compatible computer. Scoring controlled by parallel port plug.

Computer Software Options Available: Standard administration on-line.

Ways in which computer version differs: Extended Report may be generated immediately.

Cost of Materials

Specimen Set: Examination Kit—$17.50.

Counselee Materials: Documents $4.90—$7.60 (includes cost of scoring and report.)

Published Reviews:

Sabers, D. L. (1989). Review of the Career Directions Inventory. In J. C. Conoley & J. J. Kramer (Eds.). *Tenth mental measurements yearbook*. Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

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DESCRIPTION

The Career Directions Inventory (CDI) is an interest survey intended to identify areas of greater or lesser interest from among a wide variety of occupations. It is intended to have broad applicability to the general population, highlighting 'blue collar' as well as professional careers, with a relatively easy vocabulary level. It is similar to the Kuder General Interest Survey—Form E and shares some of its strengths and weaknesses.

The CDI's 100 forced-choice triads present 300 statements describing job-related activities or a certain kind of work environment or work role. The respondent is directed to "decide which one of the activities you would most like to do and which one of the activities you would least like to do." Even though more than a dozen of the statements do not describe activities, the respondent should have little difficulty following the directions. The statements, presented in unisex terms, appear easy to read, but many present activities with which the intended respondents (including high school students) will have had little experience.

The CDI does not have the long history of the Kuder E, but because it appears to be patterned after the Kuder, the history of the latter probably serves to provide the interested reader with the background for this type of assessment.

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Kuder's (1977) book and much other information about the development of the KOIS should be relevant.

USE IN COUNSELING

Schrank (1989) reported that examinee response to the CDI has been highly positive and that in most cases students using the instrument have been stimulated in the career search process. Because it is less likely that a counselor would recommend using an interest inventory for a student who already has stated an interest in a particular field, the likely use of the CDI may be to encourage an individual to start a career search. For this purpose the instrument will be easy to use. The manual is readable and presents useful case summaries to assist in interpretation of results.

The CDI answer sheet must be machine scored by the publisher, but the advantage of central scoring is a very complete profile. The "CDI Profile" is a 10-page computer generated report that should be understandable by most intended readers. The disadvantage of using the publisher's scoring is the time lapse for obtaining the report. The purpose of engaging a student in a career search is not enhanced by even a short waiting period. However, the computer-based version can be adopted by users desiring quick scoring.

A questionable aspect of the score report is that each standard score is expressed twice as an exact number with no provision for the standard error of measurement. A preferred graphic representation of each standard score would be as a confidence interval. The counselor should caution the examinees that the scores are not as reliable as the score report may lead them to believe.

The manual contains adequate warning regarding interpretation of the scores. Misuses should be minimized by the repeated cautions in the score report emphasizing a need for local validation, as well as the limitation of using only one source of information on which to base a decision. One shortcoming in this respect is the statement in the manual that "low scores represent rejected activities." A more accurate statement, because of the forced-choice nature of the task, is that these are relatively less attractive activities for the individual. It is commendable that the CDI report concludes with suggestions for obtaining additional information to validate the information reported in the profile.

TECHNICAL CONSIDERATIONS

The "norming group" is an unidentified sample of 1000 respondents who are not intended to be representative of any specific population. The 1000 subjects (500 males, 500 females) were drawn from the 12,846 respondents included in the 138 specialty groups identified for validation purposes. The institutions listed in the manual as those contributing data to the standardization should not have been used to define a population for the norms. The scores of this group do not provide usable norms based on any representative group. Thus, the description of the sample presented in the scoring report as "people enrolled in many different career training programs" seems preferable to "people in general" as used in the validity section of the manual.

How important is the lack of representativeness of the norm group? It is more likely to be a problem when norms are used to represent an individual's standing in a normative comparison rather than in an ipsative comparison such as is used with the CDI.

The reliability information consists of test-retest and alpha coefficients. The test-retest coefficients are based on 70 respondents over a period of about two weeks, and there is no indication of the lack of precision in an estimate based on such a small sample. The coefficient alpha reliabilities are based on the norming sample of 1000 respondents, a sample size that is adequate for this purpose. These internal consistency coefficients for separate scores range from below .70 to above .90, and are likely to be judged as acceptable or high. Of more interest to the user would be stability estimates based on longer periods of time; yet it is not unusual for that type of information to be absent even for instruments that have been available for several years. The major problem is not a lack of data to support reliability, but that the degree of precision (or lack of it) is ignored in score interpretation.

The strange and unknown composition of the normative group should not introduce a major problem for the validation of the scales. The validity information is based on comparing the distribution of scores on different specialty groups with scores obtained by the 1000 people forming the normative group. It is possible that the CDI normative group (a type of user norm group) is better than a census-representative norming sample because the latter sample would include people who might not take the task seriously when responding to the survey (this is one of the sources of the "Lake Wobegon Effect" in standardized achievement testing).

The contrasted groups validation technique was used repeatedly, and the manual provides abundant data for judging the validity of the many scores. The manual presents Jackson's (1986) arguments against obtaining unrepresentative samples of 'successful' people in the occupations to form criterion groups. Because the data presentation emphasizes visual rather than numerical bases for validity, some users may look unsuccessfully for validity "coefficients" or indices of group separation. Statements about lack of validity evidence should emphasize poor quality of evidence or absence of valid criteria rather than lack of data.

COMPUTER-BASED VERSION

A computer-based version is available, but was not included in the materials provided for this review. Schrank (1989) was favorably impressed with the capabilities of the computer version and the support provided by the publisher. He reported that it was available for IBM or compatible microcomputers and "assumes only basic familiarily with personal computers." Also, menus are used to access program functions and a toll-free number is available for professional assistance for software problems. He indicated that this service was "found to be immediately responsive and helpful in problem resolution."

OVERALL CRITIQUE

It is clear from a caution on the survey booklet that the CDI does "not measure your ability nor is it an indication of your future success." The purpose is to direct the respondent to types of work that might be satisfying: "Its major aim is to suggest types of educational and work activity that might suit your interests." Given that there are no claims of predicting success or user satisfaction in the suggested occupations, one might argue that there is little validity information needed to support the claims of the CDI.

There appears to be little to differentiate between the Kuder and the CDI for users who prefer ipsative measures of occupational interest. The Strong Interest Inventory will be the choice of those who prefer a "Like, Indifferent, Dislike" response to each statement in an interest inventory.

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Kuder, F. (1977). *Activity interests and occupational choice.* Chicago: Science Research Associates.

Schrank, F. A. (1989). Review of the Career Directions Inventory. In J. C. Conoley & J. J. Kramer (Eds.), *Tenth mental measurements yearbook.* (pp. 143–144) Lincoln, NE: University of Nebraska-Lincoln

NOTE: Portions of this review were abridged from the author's original review in the *Tenth Mental Measurements Yearbook* with permission of the Buror Institute.

Career Occupational Preference System Interest Inventory (COPS)

R. R. Knapp and L. Knapp

EdITS
P.O. Box 7234
San Diego, CA 92167

Target Population: Grades 7–12, college and adult.

Statement of the Purpose of the Instrument: The COPS Interest Inventory is designed to measure occupational interests presented with extensive interpretive material to assist individuals in the career decision-making process. Measurement scores based on job activity preferences are keyed directly to occupational information systems and independent consideration of abilities and educational choices for the purpose of providing a method of analyzing these scores and related information in order to result in career decision making.

Titles of Subtests, Scales, Scores Provided: Raw scores and percentiles are presented for eight major career clusters, five of which are divided into professional and skilled levels with one additional skilled level cluster for Technology. Figure 1 attached for complete scale descriptions. Scales are as follows: Science, Professional; Science, Skilled, Technology, Professional: Technology, Skilled; Consumer Economics; Outdoor, Business, Professional; Business, Skilled; Clerical; Communication; Arts, Professional: Arts, Skilled; Service, Professional; Service, Skilled.

Forms and Levels Available, with Dates of Publication/Revision of Each: Self-scoring form and machine-scoring form survey items copyright 1982. All norms 1988. All interpretive material revised 1992 (and updated every two years).

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: COPSystem Technical Manual (1990); COPS Examiners Manual (1990).

Languages in Which Available: English, Spanish, Large Print.

Time: Actual Test Time: 20–30 minutes.
Total Administration Time: 20–30 minutes.

Norm Group(s) on Which Scores Are Based: Two norms groups: 7–12 and college.

Manner in Which Results Are Reported for Individuals

Types of Scores: Raw Scores and Percentiles.

Report Format/Content

Basic Service:For Self-Scoring: Profile of scores with scales descriptions, sample job titles keyed to DOT, OOH, COPSystem Career Briefs and Cluster Booklet Kit, presented along with

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skills and abilities needed and related college majors: A career and educational planning guide and an informational interviewing form is also provided. For Machine Scoring: Profile of scores both percentile and raw, a Needs Assessment Summary plus all of above listed information for the Self-Scoring Form.

Report Format/Content for Group Summaries

Basic Service: Group scores by school, district, state. Group scores by Career Cluster and or Needs Assessment; Individual scores by cluster area and Needs Assessment.

Scoring

Machine Scoring Service

Cost of basic service per counselee: Scoring Service $1.30/examinee; Machine scoring booklets $182.25 per 500, $11.00 per 25, $38.75 per 100.

Cost of Options: Duplicate printout $.40; Basic List Report $.30 per examinee Record Label $.35/examinee; Summary of Interests, Needs Assessment Summary & Examinee by Interest Area all $.15 per report.

Time required for scoring and returning: 10 business days after receipt of answer sheets.

Hand-Scoring

Scored by: counselee; clerk; counselor.

Time required for scoring: 20 minutes

Local Machine Scoring:

Provisions/conditions/equipment required: Must Purchase On-Site Booklets, Profile and Paper from EdITS for each examinee. One time purchase of scoring software updates provided at no additional charge. Hardware: Sentry 3000 series, OpScan 5 (with two readheads), 7000 series or Scantron 8000 series (with two readheads) scanner; Wide carriage Dot matrix printer, IBM PC/XT/AT, IBM PS2 or compatible.

Computer Software Options Available: Not available.

Cost of Materials

Specimen Set: $7.50/Demonstration Packet Available at no charge.

Counselee Materials: Material available in quantities of 25, 100 & 500 (discounted accordingly). All consumable. Self-Scoring Booklets: 25—$10.50; 100—$38.25; 500—$179.75. Self-Interpretation Profile & Guides: 25—$10.25; 100—$36.25; 500—$168.50. Machine Scoring Booklets: 25—$11.00; 100—$38.75; 500—$182.25.

Additional Comments of Interest to Users: Self-Interpretation Profile and Guide is updated every two years. There are plans to renorm the COPS in 1993.

Published Reviews:

Bauernfeind, R. H. (1988). Review of the Career Occupational Preference System Interest Inventory. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to career assessment instrument (2nd ed.)*. Alexandria, VA: National Career Development Association.

Bauernfeind, R. H. (1972). Review of the California Occupational Preference Survey. In O. K. Buros (Ed.), *Seventh mental measurements yearbook*. Highland Park, NJ: Gryphon Press.

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DESCRIPTION

The Career Occupational Preference System Interest Inventory (COPS), 1982 Edition, is a career-exploration instrument which contains a 168-item list of things people do in jobs. Twelve of these job activity items are included for each of 14 career clusters. Examinees identify whether they like or dislike each job activity very much or moderately, as in this example:

132. Design artistic furniture L l d D.

Following untimed completion of the instrument, scoring is completed manually by examinees or others, locally with software purchased from the publisher, or off-site by the publisher. Scoring yields individual raw scores, percentile ranks, and profiles; machine-scoring offers additional features, including brief narrative interpretations for examinees, as well as options such as group summaries by areas of interest or need.

The career clusters of highest interest are identified for each examinee. Follow-through materials include broad definitions of career areas, related courses of study, sample occupations, samples of needed skills and abilities, suggested activities for experience, resources for additional information, planning guides for education and experience, and job interview formats. Occupations are keyed to the *Dictionary of Occupational Titles*, the *Occupational Outlook Handbook*, *VIEW*, the *COPSystem Career Briefs Kit*, and the *COPSystem Career Cluster Booklets*. For Canadian users, interpretive material is keyed to occupations found in the *Canadian Classification and Dictionary of Occupations*.

The 14 career clusters were derived from multiple-factor analysis studies (Knapp, Knapp, & Knapp-Lee, 1990, pp. 32–35). Five of these are coupled depending upon the length of required education. The clusters, together with examples of work types, are: Science, professional (research); Science, skilled (laboratory work); Technology, professional (engineering and design); Technology, skilled (construction, installation, manufacture, and repair); Technology, consumer economics (shop, food, and textile work); Outdoor (farming, forestry, fishing, and mining); Business, professional (management); Business, skilled (sales and promotion); Clerical (office work); Communication (writing and oral communication); Arts, professional (fine and performing arts); Arts, skilled (graphic arts and design); Service, professional (education and social service); and Service, skilled (other personal, social and health services).

The COPS is available in various forms: COPS, for junior and senior high school and college students and some adults at grade 6 reading level and above, with male and female norms; *COPS-R*, for grades 6–12 students at grade 6 reading level and above, with single-sex norms; *COPS-II*, for identified individuals and groups at grade 4 reading level and above; *COPS-P*, for those directed toward or involved in professional careers at grade 8 reading level and above, with professional career clusters; *COPS-PIC*, for elementary through high school individuals and groups with language or motivational needs, nonverbal; *SPOC (Sistema de Preferencia Ocupacional de Carreras)*, for Spanish-speaking and Spanish-reading individuals; and *MATCH* (Making a Terrific Career Happen), for high school graduates, college students, and adults interested in matching of the examinee and the job market. Canadian materials are also available.

The COPS is part of a systematic career development assessment and follow-through program, which includes the *Career Ability Placement Survey* (CAPS), the *Career Orientation Placement and Evaluation Survey* (COPES) (work values), a comprehensive guidebook, pocket-size and wall-display career cluster charts, support materials such as overhead transparencies for group administration, and complementary materials such as the *Study Attitude and Methods Survey* (SAMS). The CAPS and COPES are currently under revision and are not included in this review.

USE IN COUNSELING

The COPS may be used by individuals and groups in school, college, clinic, and employment settings to stimulate and enhance career exploration and decision-making. Following are examples of some of the uses:

- Develop, create, broaden or narrow, and validate options for career and occupational choices.
- Provide career and occupational information, and offer routes to additional information through keyed references and resources.
- Identify the organization of the world of careers and work.
- Relay the necessity and teach the meaning of work.
- Serve as the core of a conceptually and operationally systematic, longitudinal program for career and work development.
- Provide stimuli, content, and materials for clients through the cooperation of institutional units, for example, school curriculum, instruction, career education, career guidance, counseling, and career resource centers.
- Serve as catalyst for extended and collaborative programs, such as business-to-business and industry-to-industry employee exchange programs, outplacement opportunities, entry and re-entry efforts, and in job transitions. Some examples of these uses might be in parent-student-staff seminars, after-school clubs, work experience programs, business-education partnerships, and in apprenticeship and internship programs.

Examinees may take unlimited degrees of personal initiative, responsibility, and authority in pursuing and applying information, depending upon their maturity. In most situations, the counselor will choose to introduce an individual or group to the program. The counselor will need to serve as a guide at critical points in the process. Creative program planners, developers, managers, and counselors will find many ways to use this versatile instrument.

Resources to assist in the use of the inventory are available. Among them are *How to Use the COPSystem for Group Guidance in a Career Guidance/Career Education Program*, and *COPSystem Comprehensive Career Guidebook*.

TECHNICAL CONSIDERATIONS

The COPS norms, updated in 1988, were developed with a national sample of intermediate, high school, community college, and college students, in five regions from 50 states and the District of Columbia, using 1980 census figures for balancing the representation of urban-rural and minority groups. Federal and state regulations were observed, and separate sex norms were created. The COPS-R, with sex-balanced inventory items, offers combined sex norms for those who need or choose them (Knapp et al., 1990, pp. 52–57). The COPS norms and interpretive materials are currently being revised (L. Knapp-Lee, personal communication, September 16, 1992).

Reliability and stability studies reported in the *COPS Technical Manual* (Knapp et al., 1990) identified the following interest scale coefficients: .88 to .93, alpha; .77 to .90, one-week parallel forms; .80 to .91, one-week test-retest; and .62 to .80, one-year test-retest (pp. 37–38). A study of self-scoring yielded 92% accuracy in the identification of the three highest interest areas (p. 41).

In a follow-up study of predictive validity, a comparison of the relationship of the three career clusters of highest interest with current educational and occupational status showed 60% agreement, considered a "good hit rate" in prevailing literature; relationships for various subgroupings ranged from 56% to 98% (Knapp, Knapp, & Knapp-Lee, 1985, pp. 351–352). In construct validity studies, comparisons with related instruments showed the highest correlations for conceptually similar interest scales; comparisons of studies selected by college students and community college vocational students showed agreement of 71% and above with the three highest career clusters; comparisons for military occupational groups were also high (Knapp et al., 1990, pp. 42–51).

OVERALL CRITIQUE

The COPS, with an organized conceptualization of the work world, offers a systematic opportunity for the review of a wide range of gender-free professional and skilled job activities, the identification of preferred career cluster options, and the study of specific occupations. Available in different formats, reading levels, and languages for different purposes for different populations, the instrument is applicable for individuals and groups in school, college, adult, clinic, and employment settings.

The combined COPSystem measures of interests (COPS), abilities (CAPS), and work values (COPES) offer a potential basis for the development of a coordinated and comprehensive approach to career exploration and career decision-making. The COPS and the COPSystem lend themselves to the team approach, for example, in school administrative, instructional, and pupil personnel programs, with students, staff, parents, and community, or in industry management, personnel selection and placement, and training and development programs.

Ongoing research, development, and revision support the versatility and usefulness of COPS. These reviewers agree with others (Bauernfeind, 1988; Bauernfeind, Wickwire, & Read, 1991, pp. 98–99) in strongly endorsing the use of this instrument, and also recommend the active involvement of counselors in the planning and implementation of its uses and applications.

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Bauernfeind, R. H. (1988). Review of the Career Occupational Preference System (COPS) Interest Inventory. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to career assessment instruments* (2nd ed., pp. 81–85). Alexandria, VA: National Career Development Association.

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Knapp, R. R., Knapp, L., & Knapp-Lee, L. (1990). *COPSystem technical manual*. San Diego, CA: EdITS.

Chronicle Career Quest® (CCQ)

CGP Research Staff

Chronicle Guidance Publications, Inc. (CGP)
66 Aurora Street, P.O. Box 1190
Moravia, NY 13118-1190

Target Population: Grades 7–12.

Statement of the Purpose of the Instrument: CHRONICLE CAREER QUEST® is a comprehensive interest inventory based program designed to guide the user through the career development process. Components are designed to reduce counselor workload yet provide for appropriate counselor review and consultation. A complete array of features includes reports for parents and administrators, a crosswalk for accessing commonly used classification systems, jobs of the future, and linkage to career guidance software for post-secondary educational exploration and decision-making.

Titles of Subtests, Scales, Scores Provided: Interest Inventory (Form S) contains 108 statements about activities in 12 G.O.E. Interest Areas (9 for each Interest Area). Interest Inventory (Form L) contains 144 statements about activities in 12 G.O.E. Interest Areas (12 for each Interest Area).

Forms and Levels Available, with Dates of Publication/Revision of Each: Interest Inventory (Form S) 1991, Interest Inventory (Form L) 1991; Interpretation Guide (Form S) 1993; Interpretation Guide (Form L) 1993.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: CCQ Administrator's Guide (1992), CCQ Technical Manual (1992), Career Crosswalk (1993).

Languages in Which Available: English only.

Time: Actual Test Time: Interest Inventory (Form S and L) 10–15 minutes; Interpretation Guide (Form S and L) 10–15 minutes.
Total Administration Time: 30–35 minutes.

Norm Group(s) on Which Scores Are Based: Form S—Female and Male students in grades 8–9; Form L—Female and Male students in grades 9–11; Ethnic distribution included African-Americans, Asian-Americans, American Indians, Hispanics, and Caucasians.

Manner in Which Results Are Reported for Individuals

Types of Scores: Standard scoring to World of Work Chart from Interest Inventory results.

Report Format/Content

Basic Service: Individual profile report (World of Work Chart).

Options: Gender specific World of Work Charts.

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service: Not available.

Hand-Scoring

Scored by: counselee; clerk; counselor.

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Time required for scoring: Less than 5 minutes.
Local Machine Scoring: Not available.

Computer Software Options Available: Not available.

Cost of Materials

Specimen Set: Interest Inventory (Form S and L), Interpretive Guide (Form S and L), Administrator's Guide, and Career Paths—$3.50.

Counselee Materials: Interest Inventory (Form S and L)—Consumable; Interpretation Guide (Form S and L)—Consumable; Career Crosswalk—Reusable; Career Paths—Reusable; Occupational Profiles—Consumable; Summary Sheet—Consumable; Report to Parents—Consumable.

Form S: Kit of 25 Interest Inventories, 25 Interpretation Guides, and 1 Administrator's Guide$31.25; Career Paths Form S, Reusable, package of 25—$20.75.

Supporting Materials: 100 Occupational Profiles—$8.00; 50 Summary Sheets—$5.50; 50 Career Paths Chart—$4.00; Technical Manual—$10.00; Career Crosswalk—$12.00; 50 Report to Parents—$25.00.

Additional Comments of Interest to Users: CCQ has been evaluated and adopted for use by the following states and cities: New York City Board of Education, Department of Defense Dependents Schools (DODDS), Virginia Department of Education, Los Angeles Unified School District, and the Florida Department of Education.

Published Reviews:

Thompson, D., & Daniel, L. (in press). *Supplement to the eleventh mental measurements yearbook.* Lincoln, NE: University of Nebraska-Lincoln.

David L. Livers

Professor of Counselor Education
Illinois State University

DESCRIPTION

Chronicle Career Quest (CCQ) is a relatively new self-administered, self-scoring interest inventory designed to help users explore their interests as they relate to occupations. The publishers developed this instrument to maximize opportunities for translating interest inventory results into a wide occupational database and to provide for a broad program of career development and planning. The CCQ is prepared in two forms (S and L), and is normed for use with both middle/junior high and senior high school students. Inventory results may then be linked to various classification systems as well as to informational materials published by Chronicle Guidance Publications, Inc.

The 12 interest areas identified in the *Guide for Occupational Exploration* (GOE) (U.S. Department of Labor, 1979) provide the basis for categorizing occupations in both Forms S and L. Form S is intended for students in grades 7 through 9 who are beginning the process of career awareness and exploration.

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It contains 108 statements concerning work-related activities. There are nine items for each GOE interest area. Users rate each activity on a forced-choice like/dislike scale. Form L, designed for high school students, consists of 144 statements concerning work-related activities, with 12 items in each GOE category. Each activity is rated on a 3-point scale: Uninteresting, Interesting, and Very Interesting. Both forms are easy to administer and score and can be used with either groups or individuals. The reading level for both inventories is listed as grade 6.6.

USE IN COUNSELING

The format of both forms S and L should appeal to both teachers and counselors. Students should be able to complete and score either inventory in approximately 40 minutes, or within a typical class period. This allows the opportunity to develop supervised group career exploration and planning sessions as classroom units or exercises. Also, the results may motivate students to do some early planning toward the development of occupational choices they will make when they leave the school setting. Perhaps the greatest strength of the inventory is the opportunity for career exploration through the comparison of a student's interest profiles to most major existing classification systems.

Once individuals complete the instrument and record their scores for each of the 12 interest areas, results are plotted on a World of Work Chart to develop an interest profile. Total scores denote career options for exploration, which can be facilitated by an appendix listing over 1,100 occupations grouped by the 12 interest areas. Subscore totals indicate areas to explore in sequence and areas to learn more about, rather than referring to the results as high or low scores. Next, using both the GOE interest area number and the Chronicle identification number, specific job titles can be selected for further study. Using the CCQ *Career Crosswalk* (Chronicle Guidance Publications, Inc., 1991), identification numbers can be found for the *Dictionary of Occupational Titles* (DOT) (U.S. Department of Labor, 1977), *Standard Occupational Classification Manual*, (SOC) (U.S. Department of Commerce, 1980) and the *Chronicle Guidance Occupational Briefs* (Chronicle Guidance Publications, Inc., 1993).

Additional self-explanatory materials provided by Chronicle Guidance Publications, Inc. to facilitate the work of the counselor in using the CCQ are: *The Administrators' Guide*, (forms S and L), *Career Paths*, (Forms S and L), *Technical Manual*, *Parent Report Form*, and C-LECT, a computerized occupational and educational informational resource.

TECHNICAL CONSIDERATIONS

Items for the CCQ were developed from 1,124 occupational titles listed in the GOE and *Jobs of the Future* (Cetron & Appel, 1984). There is no indication of how many items came from each of the two sources. In the final selection process, a National Advisory Board reviewed each item/activity in the sub-group to guard against any language which would reflect racial, ethnic, or gender stereotypes, or any suggestion that any occupation was more appropriate for a particular group. The National Advisory Board consisted of nine counselor educators, state directors of career education, and practicing professional counselors.

In addition to the judgmental approach to controlling bias, the development staff analyzed data from the initial administrations of the instrument using Rasch Model scale analyses to determine bias. Residuals outside a normal 95% probability range for males, females, or any ethnic group, were considered biased and were revised where possible. (CCQ Technical Manual, 1992, p. 7)

The CCQ Form S, was standardized on a relatively heterogeneous sample of 1,554 students in grades eight (1029) and nine (552) in seven junior high and middle schools in New York, Oregon, South Carolina, Florida and Mississippi. The norming sample for Form L consisted of 1,329 students in grades nine (29), ten (614), and eleven (684) in eight high schools. The sample included schools in New York, Mississippi, Washington, Minnesota, Virginia, and Indiana. The numbers of males and females were almost exactly the same for both norm groups. There is concern, however, for the number of schools sampled and the extent to which samples are geographically representative. Means and standard deviations are calculated and reported for both sexes on Form S and Form L for each of the 12 interest areas.

The only type of reliability reported for the CCQ in the technical manual or its attachments is internal consistency using Cronbach's coefficient Alpha. In the most recent study completed in the fall of 1990, reliabilities for Form S ranged from .64 to .87 on the 12 interest areas. Form L, in the fall of 1990, had a range of .76 to .89. Test data reflect a moderate to high degree of internal consistency on each subscale on both forms of the instrument. It is important to have a high degree of homogeneity within each of the 12 interest areas to establish them as unique occupational sub-groups. It would also be desirable to have evidence of stability of scores over time using the test-retest form of reliability. The latter information is not available, although such data are promised by the publisher.

Obviously, an instrument only recently published has not accumulated much validity data based on longitudinal studies. Validation of the CCQ is approached in the technical manual primarily in terms of construct and face validity.

As noted under reliability, each of the 12 interest areas on both forms S and L show a moderate to high degree of internal consistency using Cronbach's coefficient Alpha. This in itself provides one element of construct validity. The publisher further subjected the 12 subscales on both forms S and L to a factor analysis to substantiate homogeneity within subscales, selecting only items that showed they were related to the same construct. In contrast, the Inter-Interest Correlation Matrices for both forms showed relatively low correlations among all 12 scales. A measure of construct validity is thus attained by showing items within scales are related to the same construct, while different sub-scales are indeed measuring different interest areas.

Some degree of face validity is provided in the item selection process in which the advisory board, as expert professional judges, examined each item to determine whether the item accurately reflected the GOE categories. The board further contributed to the validity of the instruments by working to eliminate biased items.

OVERALL CRITIQUE

Chronicle Guidance Publications, Inc. is to be commended for a valiant effort to provide a quality instrument which provides a direct link with the rest of their career development package. As a short, self-administered, self scoring interest inventory, there is opportunity for immediate feedback, and results that may take an individual directly to the Chronicle Career Briefs and other information. The inventory development staff should also be complimented for their efforts to control bias on their items selected, and the use of an advisory board in the development process.

While preliminary research is encouraging, there is a definite need for continuing validity and reliability studies. Test-retest reliability data would be helpful in providing information about the stability of scores over time. Furthermore, as data are accumulated, validity studies should be conducted to improve the quality of inferences that may be made from using CCQ scores. It would also seem advisable to consider eliminating the forced-choice (like/dislike) format used in Form S and use only the 3-point response scale (Uninteresting, Interesting, Very Interesting), as in Form L. The CCQ is a promising and potentially useful instrument, but more research-based information is needed for a more definitive critique.

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U.S. Department of Commerce (1980). *Standard occupational classification manual*. Washington, DC: U.S. Government Printing Office.

U.S. Department of Labor. (1977). *Dictionary of occupational titles*. Washington, DC: U.S. Government Printing Office.

U.S. Department of Labor. (1979). *Guide for occupational exploration*. Washington, DC: U.S. Government Printing Office.

College Major Interest Inventory (CMII)

Robert D. Whetstone and Ronald G. Taylor

Consulting Psychologists Press
3803 East Bayshore Road, P.O. Box 10096
Palo Alto, CA 94303

Target Population: High School Students & College Freshman. 10th grade reading level.

Statement of the Purpose of the Instrument: The Scale Scores of the CMII are useful for reporting, by use of rank-ordered percentile scores, how closely a student's interests or attitudes match or "fit" various aspects of the School environment (according to the "goodness of fit" theory of academic survival). To assist students with their educational decision-making process.

Titles of Subtests, Scales, Scores Provided: 65 Academic Major Scales; 399 items; 33 Educational Cluster Scales; 13 School & College Scales; 12 Personal Characteristic Scales, 6 General Educational Area Interest Scales; and 6 Academic Achievement Interest Scales. Rank Ordered Percentile Scores.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: Manual 1990.

Languages in Which Available: English.

Time: Actual Test Time: 35–45 minutes.

Norm Group(s) on Which Scores Are Based: Students from 203 Universities and 38 States High School.

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service

Cost of basic service per counselee: $4.80 prepaid Test Booklet/Answer Sheet. Mail in scoring only option.

Time required for scoring and returning: 24-hour turnaround.

Hand-Scoring: Not available.

Local Machine Scoring: Not available.

Computer Software Options Available: Not available.

Cost of Materials

Specimen Set: Manual Prepaid Profile, Test Booklet, Answer Sheet—$29.00.

Published Reviews: None.

Reviewed By

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DESCRIPTION

The authors of the College Major Interest Inventory (CMII), Robert Whetstone (who died in 1983) and Ronald Taylor, recognized the need to construct a measure of educational interests in the mid-1970s. They created the Colorado Educational Interest Inventory, the forerunner of the CMII, in much the same manner as the Strong Interest Inventory, but changed the focus from occupations to academic majors.

The current version of the CMII closely resembles the Strong both in item format and scale construction procedures. It contains 399 items (culled from over 5,000 items on the basis of logical and item analyses) arranged in six sections. All of the items, nearly one-half of which are course titles, relate to educational topics. Item formats include both ratings (*Like-Indifferent-Dislike* and *Yes-?-No* responses) and rankings (forced-choice comparisons). It should be noted that many items have been written to include *level* as well as *type* of activity, for example, "Advanced calculus" and "Advanced writing workshop."

Similar to the Strong, the CMII contains a large number of both empirical and content scales as well as several administrative indices (e.g., Response Percent scores and Rare Response Scale). The empirical scales, which differentiate between the interests of people in specified groups, include the Academic Major Scales (the heart of the instrument) and various academic achievement scales. The content scales, which consist of items that are statistically or logically interrelated, measure particular types of interests or personality characteristics. The content scales can be used to help clarify the meaning of the scores on the empirical scales.

USE IN COUNSELING

The CMII is based on a "college fit" model of academic planning which assumes that students will be more satisfied with their majors if their interests coincide with other students enrolled in that field. The CMII is most helpful for students in the last two years of high school or the first two years of college who are trying to decide on a major for college. It can also be useful for students who are changing majors.

Specifically, the CMII can confirm a choice that a student has already made or considered, or it can suggest a number of options for a student to explore. It can also provide insight into why students may be dissatisfied with their major or suggest possible adjustments that students may make in their academic program to improve satisfaction with their major. Finally, the CMII can be used to conduct research on educational topics of importance in counseling students.

The CMII must be scored by computer. The test report shows the client's percentile scores for each of the different sections of the CMII arranged in categories from highest to lowest scores. It also lists the client's answers to questions about personal preferences (life goals, virtues, values, and styles), academic attitudes (e.g., "Receiving a college degree is very important to me"), and academic abilities (e.g., "I am in the top 10 percent of my class"). The item lists provide helpful background information for interpreting the test scores and for discussing academic and career options. No narrative interpretations are provided.

TECHNICAL CONSIDERATIONS

Separate sex norms have been used for each of the scales to take into account sex differences in item preferences. Of the 97 Academic Major Scales constructed thus far, 57 have been based on males, with 40 based on females. Additional scales for both women (e.g., Architecture and Physics) and men (e.g., Nursing and Speech Disorders) need to be constructed.

At least three-fourths of the students in both the male and female general reference groups (consisting of 474 males and 424 females, respectively) attended the University of Colorado at Boulder. All but six of the Academic Major Scales are based on the responses of students enrolled in different undergraduate majors. The relevance of the test scores for students at other universities or for students pursuing graduate work is not known.

The authors report all summary data in terms of percentiles. Although percentiles are relatively easy for students to understand, they should not be used to calculate means and standard deviations because of the unequal units involved in percentile scales. Standard scores should be used for this purpose so that a given difference between scores represents the same difference in the intensity of one's interest regardless of what point on the scale the difference occurs.

In contrast with the Occupational Scales on the Strong, which are normed in terms of members of each occupation, the norms for the Academic Major Scales are based on students in general. Because of this norming procedure, respondents will obtain relatively high scores for unpopular majors (e.g., French and Theater) and relatively low scores for popular majors (e.g., Psychology and Geography) compared with the scores that they would have obtained if the norms had been based on students in those majors. So that one's scores may be compared with students in the major as well as with students in general, it would be helpful if the average range of scores for students in each academic major could be displayed directly on the CMII profile.

Two test-retest reliability studies have been conducted, one over a 30-day period and the second one over a nine-month period. Interest scores on the CMII were highly consistent for most scales over 30 days (the median correlations for the different sets of scales were in the vicinity of .90). The median reliabilities dropped to approximately .75 for the nine-month study, somewhat lower than what would be expected based on similar research with the Strong Interest Inventory. In general, scores for individuals can be expected to vary by as much as one standard deviation upon retesting after nine months.

Unfortunately, no measures of internal consistency have been obtained. The internal consistency of the scales needs to be ascertained to provide evidence of scale integrity.

The Academic Major Scales clearly differentiated between the interests of students in different majors and students-in-general for the validation samples. These results, while impressive, have yet to be cross-validated with independent samples in other settings.

The manual reports the results of two validity studies used to determine the "hit rates" for the Academic Major Scales in identifying or predicting one's academic major. The predictions, while equally accurate for minority and nonminority students, were somewhat more accurate for men than for women. The validity studies show that the Academic Major Scales (as well as the other CMII scales) possess concurrent and predictive validity; however, the scales do not appear to be as accurate as either the College Major Scales on the Kuder Occupational Interest Survey or the Occupational Scales on the Strong Interest Inventory in identifying the majors of college students (Hansen & Tan, 1992; Kuder & Diamond, 1979).

A separate validity study based on the Academic Achievement Interest Scales shows that scores on these scales added significantly to multiple regression equations consisting of high school rank and scholastic aptitude test scores in predicting first-year grades. The CMII scores predicted academic success surprisingly well, possibly because many of the items tap self-rated abilities as well as interests.

Little information has been reported on the validity of some of the scales such as the Personality Characteristics Scales, Response Consistency Scale, and the Educational Level Interest Scale.

OVERALL CRITIQUE

The CMII is the only empirical interest inventory known to the reviewer that focuses exclusively on educational topics. It provides scores on a wide variety of scales pertinent to academic planning. It possesses promising validity and reliability based on studies conducted by the authors.

Despite its potential, the CMII suffers from a number of shortcomings. The use of percentiles to calculate summary data (means and standard deviations) is inappropriate and confusing. Limited information has been provided about the internal nature of the instrument such as number of items and item content for each scale, results of item analyses, and details of validation studies. The norms lack adequate representation of students from a broad range of colleges and from graduate as well as undergraduate programs. The validity of the test scores in different academic settings for both sexes also needs to be studied. More reliability studies (especially in regard to internal consistency) need to be conducted.

In summary, the CMII offers a comprehensive description of educational interests for college or college-bound students; however, it needs additional development before it can be relied upon as a counseling instrument.

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Harrington-O'Shea Career Decision-Making System—Revised (CDM-R)

Thomas Harrington and Arthur O'Shea

American Guidance Service, Inc.
4201 Woodland Road
Circle Pines, MN 55014-1796

Target Population: Grades 7–12, college, adults.

Statement of the Purpose of the Instrument: The CDM-R provides valid and reliable assessment of career interests. Its purpose is to involve the client in steps designed to help in self-understanding of values and abilities needed for successful career choices and development. The instrument also focuses the client on those school subjects pertinent to career areas. The CDM-R, in its Interpretive Folder, provides a crosswalk to college majors and training programs. The interpretive material provides directions for career exploration in selected Career Areas and lets the client expand career exploration to more jobs in other career areas.

Titles of Subtests, Scales, Scores Provided: The CDM-R features a 96-item interest inventory in the Level 1 edition and a 120 item inventory in the Level 2 edition. Scores are determined on a basis of 2 points for "Like the Activity," 1 point for "Can't Make Up Your Mind," or 0 points for "Dislike the Activity." Scores are tabulated and raw scores are used to designate the two highest-scoring Career Interest Areas. Most counselors or teachers work with the clients using the raw scores; however, percentile rank norms are available in the manual for college freshmen, grades 10 through 12, and grades 7–9.

Forms and Levels Available, with Dates of Publication/Revision of Each: The CDM was developed in 1976; the previous edition of the Manual was published in 1982. The instrument was available in one level. The new CDM-R Hand-Scored is available in Level 1 and Level 2 editions, as well as Machine-Scored in the Level 2 edition. These three editions of the CDM-R were published in 1992. The Level 2 edition of the CDM-R corresponds to the original CDM.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: The original Manual was published in 1981; a revision was published in 1993.

Languages in Which Available: English. The original CDM is available in Spanish. The CDM-R Level 2 is in the process of being translated into Spanish.

Time: Actual Test Time: Approximately 20 minutes is required to work through the inventory for Level 1. Clients usually work through the Level 2 booklet in 30–45 minutes. For both levels, additional time is required to work through the interpretive materials. Individual teachers or counselors may vary the time for interpretation, depending on available time with clients.

Norm Group(s) on Which Scores Are Based: Data are reported in the Manual by sex, and by grades 7–9, 10–12, college freshmen, and adults. Data for the original CDM English and Spanish samples are included. For the newer CDM-R, data are included for English Level 1 and 2 and Spanish, Level 2.

Manner in Which Results Are Reported for Individuals

Types of Scores: Raw Scores.

Report Format/Content

Basic Service: For the Machine-Scored Edition, reports are given on the same Interpretive Folder as used in the Hand-Scored Level 2 edition, with an additional page of information for counselors/teachers. In addition, on the Machine-Scored report, percentages of Likes/Can't Make Up Mind/Dislikes are reported.

Report Format/Content for Group Summaries

Basic Service: Not available.

Options: An optional Group Summary Report, available only with the Machine-Scored edition, summarizes client responses by grade or counselor group, including local frequency distributions and cumulative percents. This must be requested at the same time as answer sheets are sent in for scoring.

Scoring

Machine Scoring Service

Cost of basic service per counselee: The Level 2 CDM-R is available in a Machine-Scored Edition. Cost is $2.25 per client for 10 or more ($4.25 per client if fewer than 10 are sent). The Group Summary is $.35 per client.

Time required for scoring and returning: The publisher will return scored Profile Reports within five working days (not including mailing time).

Hand-Scoring

Scored by: The clients score their own interest surveys (both levels). This is included in the time given above for taking the interest inventory.

Computer Software Options Available: Computer software is not available from the publisher. However, raw scores from the completed interest inventory can be entered in the GIS system and a report generated.

Cost of Materials

Specimen Set: Sampler set contains a copy of the Level 1 Hand-Scored Booklet and the Level 2 Survey Booklet and Interpretive Folder. Cost $8.45.

Counselee Materials: Level 1 Hand-Scored package containing 25 Booklets and Directions sheet: $49.95 for 1–4 packages; $44.95 for 5–19 packages; $41.95 for 20+ packages. Level 2 Hand-Scored package containing 25 Survey Booklets, 25 Interpretive Folders and Direction sheet. Same prices as above. Machine-Scored: Package of 25 reusable Survey Booklets—$31.75; Package of 25 Answer Sheets—$24.25; Scoring 10+ Answer Sheets—$2.25 each; Scoring 1-9 Answer Sheets—$4.25. Spanish (available at this time in original CDM version). Same packaging and same pricing as Level 2 English. Audiocassette, contains Level 1 and Level 2—$12.75. Manual—$20.95.

Additional Comments of Interest to Users: An audiocassette is available for those who may have reading difficulties. It has the interest inventory and preliminary directions for Level 1. For Level 2 it includes the lists of school subjects, values, abilities, and future plans, as well as the interest inventory and brief directions.

Published Reviews: No review of the revised CDM-R is available at this date. Following reviews are of the previous edition.

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American College Testing

DESCRIPTION

The CDM-R continues its emphasis on actively involving the individual in the career exploration and decision-making process. It has been divided into two levels. Level 1 is designed to provide general career information and direction to seventh- through tenth-grade students. Level 2 is designed to help eleventh-grade through college students make decisions concerning majors, occupations, and/or training programs. When used with adult populations, the CDM-R may provide help with either voluntary or involuntary career change.

The Level 1 CDM-R does not require as much from the individual as does Level 2; therefore, the following discussion focuses on the Level 2 CDM-R, with notes about Level 1 as necessary. The CDM-R has six parts. The first five parts are self-reports of two Job Choices, two best-liked Subjects, one Future Plans (future training), four highest-rated Values, and four best Abilities. The sixth part is the Interest Survey, which is the only component used at Level 1. The Interest Survey contains 120 items rated on a "Like," "Can't Make Up Your Mind," and "Dislike" scale. All the items are job activities such as "write a book."

The CDM-R is based, like many interest measures, on Holland's (1985) theory of vocational personalities (i.e., Realistic, R; Investigative, I; Artistic, A; Social, S; Enterprising, E; and Conventional, C). This theory provides for six basic work personalities and work environments. The general use of the theory is to match individual work personalities with similar work environments. The CDM-R uses 20 items to assess each of its six scales: Crafts (R), Scientific (I), The Arts (A), Social (S), Business (E), and Office Operations (C) (formerly Clerical) .

The new CDM-R interpretative folder provides an integrated look at all six components in the system. It provides 18 job clusters with at least two clusters for each of the six scales. These clusters also have typical jobs listed, as well as the abilities, school subjects, and job values for the job clusters. The CDM-R has kept its link to the *Guide for Occupational Exploration* (GOE) (Harrington & O'Shea, 1984) by providing GOE numbers for select jobs. In addition, lists of college majors and training programs are provided for each of the six scales. The Level 1 interpretative information is similar in that it provides examples of values, abilities, and school subjects for each of the six interest scales.

USE IN COUNSELING

The CDM-R is intended for use with both younger students (Level 1) and mature students and adults (Level 2). For the younger individual, the CDM-R is most useful as an exploration device. It provides a means of helping the student see the need for planning and exploring the possibilities of future careers. For the more mature and adult individual, the CDM-R provides a means of making decisions about college majors and/or occupational choices. It has been used effectively for adults making career changes. The CDM-R lends itself to both individual and group counseling settings. For example, the CDM was used successfully with a correctional rehabilitation program in New York that allowed inmates in the program to clarify and focus job-related interests, values, and abilities.

TECHNICAL CONSIDERATIONS

Most of the research conducted on the CDM and CDM-R has been on the only measured component, the Interest Survey. The CDM-R scores are reported as raw scores. The authors state that since the CDM-R is domain-referenced, the use of normed scores is not necessary or even desirable. This raises the issue of gender bias and raw scores in interest measurement (interested readers should refer to the writings of Prediger and Cole, [1975] and Holland, [1987] for the two most prevalent viewpoints on this issue).

The 1991 revision of the CDM utilized two samples for tryouts of the new system. The Level 1 tryout contained 965 seventh-grade through tenth-grade students, and the Level 2 tryout contained 996 ninth-grade through twelfth-grade students. In addition, the tryouts were somewhat representative of the United States census regions and were approximately balanced for race and gender. The authors also made use of sample data from the 1981 CDM development where useful to provide evidence of the representativeness of the nation.

Reliabilities were reported in several ways. The internal consistencies were reported with median alphas of .90 (range .88 to .93) for Level 1 and .93 (range .92 to .95) for Level 2. These compare favorably with those obtained from earlier versions of the CDM. Two week test-retest reliabilities ranged from .74

to .87 for the six interest scales, with a median of .79 for the 1991 sample. Again, these compare favorably with the previously reported test-retest reliabilities. In addition, the authors chose to examine the equivalence of the two levels of the CDM-R using LISREL techniques. Although they found that there were some slight differences between the levels, the two levels of the CDM-R were judged to be equivalent.

Validity of the CDM-R is presented in terms of construct validity and criterion-related (concurrent) validity. With respect to the construct of interests, the intercorrelations between the six scales were examined. These intercorrelations are consistent with the hexagonal model proposed by Holland (1985). Also, if plotted in a two-dimensional space, a misshapen hexagon would be produced. This is as expected according to research by Vansickle and Prediger (1991) and others. Criterion-related validity was examined by looking at the match of the three-letter codes for occupational groups and the *Dictionary of Holland Occupational Codes*, (Gottfredson and Holland, 1989). A comparison of 53 occupational groups yielded 55 percent very good matches, 30 percent close matches, and 15 percent poor matches. The degree of match was determined via the Iachan (1984) index. Additionally, a similar procedure was used with 60 college majors and training programs and yielded 45 percent very close matches, 42 percent close matches, and 13 percent poor matches. The authors have also begun to validate the CDM-R use in languages such as Spanish, Canadian French, and Norwegian. In addition, validation in countries such as Australia has been conducted.

COMPUTER-BASED VERSION

The CDM-R is not currently available in a stand alone computer-based format from American Guidance Service, Inc. However, the original CDM did have a computer-based version. This version was available for both the Apple II and IBM/MS-DOS computers. The CDM-R manual (in press) does state that the computer-based version is, however, part of the computer-based *Guidance Information System* (GIS) published by Riverside Publishing Company. The authors have provided all of the revision information to this publisher for updating the CDM component in the GIS. The authors do discuss, in the CDM-R manual, the equivalence of mode of administration between the paper-pencil version and computer-based version of the CDM. Independent research by Kapes and Vansickle (1992) found that the computer-based version was more reliable than the paper-pencil version of the CDM. The authors state that the computer-based administration of the CDM was slightly more reliable and produced approximately equivalent scores.

OVERALL CRITIQUE

The Harrington-O'Shea Career Decision-Making System—Revised (CDM-R) is a fairly complete occupational exploration and information system. It is centered or focused on an individual's vocational interests. Willis (1982), in a review published in the first edition of the *Counselor's Guide to Vocational Guidance Instruments*, pointed out that the CDM was early in the development process, but had promising research underway to support its use. Droege (1988), in a review in the second edition of the *Counselor's Guide to Career Assessment Instruments*, made the point that the CDM was a good example of a new generation of instruments for use in career exploration and guidance. It is quite possible that the CDM-R has reached maturity.

Although some new research is reported, the CDM-R has not been researched as extensively as some other interest inventories. In part, this is due to the relative young age of the instrument. However, the CDM-R appears to be sound psychometrically, and the authors have put forth a great deal of effort making the CDM-R easy to use for the client. The development of two levels is a good modification and may encourage younger individuals to start taking a serious look at their possible careers. The CDM-R is a good career exploration device and provides usable career information to both the client and the counselor. It would be a good choice for those practitioners wishing to provide clients with a positive, active, and helpful career exploration experience.

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Interest Determination, Exploration and Assessment System® (IDEAS)

Charles B. Johansson

NCS Assessments
P.O. Box 1416
Minneapolis, MN 55440

Target Population: Junior high, middle school and early high school, special education, ''students at risk,'' and adults.

Statement of the Purpose of the Instrument: IDEAS is a self-contained, self-scorable, interest inventory that serves as an introduction to career planning. It provides scores on 16 basic interest scales that help students and adults identify and explore occupational areas of interest. The inventory booklet includes updated OOH and DOT references and suggested school courses.

Titles of Subtests, Scales, Scores Provided: 16 broad interest categories covered: mechanical/fixing, protective services, nature/outdoors, mathematics, science, medical, creative arts, writing, community service, educating, child care, public speaking, business, sales, office practices, food service.

Forms and Levels Available, with Dates of Publication/Revision of Each: One form, published 1977, revised 1990.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1990.

Languages in Which Available: English, Spanish.

Time: Actual Test Time: 20–25 minutes.
Total Administration Time: 20–25 minutes.

Norm Group(s) on Which Scores Are Based: Students in grades 7–9, grades 10–12, and adults.

Manner in Which Results Are Reported for Individuals

Types of Scores: Raw and standard scores.

Report Format/Content

Basic Service: Individuals score and graph their own results. Printed interpretive information is included in the IDEAS booklet.

Options: Not available.

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service: Not available.

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Hand-Scoring

Scored by: counselee

Time required for scoring: Actual test time and scoring take approximately 40–50 minutes.

Local Machine Scoring: Not available.

Computer Software Options Available: Not available.

Cost of Materials

Specimen Set: Includes three IDEAS test booklets and one manual. Cost: $11.95.

Counselee Materials: Combination test booklet and answer sheet. Sold in packages of 50. Cost: 1–9 packages $50.00/pkg ($1.00 each). 10+ packages $45.00/pkg ($.90 each).

Additional Comments of Interest to Users: OOH references listed in the IDEAS test booklet are updated every two years to correspond to the most recent edition of OOH.

Published Reviews:

Borman, C. (1982). Review of the Interest Determination Exploration and Assessment System. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to vocational guidance instruments.* Falls Church, VA: National Vocational Guidance Association.

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DESCRIPTION

The IDEAS is a vocational interest inventory designed for students grades 7 to 12 and adults. It is a shortened version of the Career Assessment Inventory

(CAI) by the same author. In contrast to the CAI, IDEAS was designed only to differentiate among broad categories of interest and "to help individuals explore their personal vocational preferences." As such, it is of limited utility for predicting vocational choice or as an instrument on which to base career decisions.

The IDEAS was first developed in the mid-1970s with 112 test items appearing in the test booklet. Originally, 14 career interest scales were constructed using these items. The current edition of IDEAS is an updated version of an original instrument with several changes. The number of items in the inventory has been increased from 112 to 128, and the number of career-related scales has been increased from 14 to 16. Adult norms have been added. Also, the instrument no longer includes norms for grade six.

To complete this test, respondents answer the 128 items regarding their likes and dislikes including the titles of occupations, school subjects and various work or school related activities. Each of the 128 items is presented in a clear and concise manner and consists of a single phrase of no more than eight words. The reading level of the instrument is 6th grade and each phrase is gender neutral.

The five-choice response options are presented in the form of a Likert scale. The choices include: like very much (L), like somewhat (l), indifferent (I), dislike somewhat (d), and dislike very much (D). The respondent is to circle the choice which most represents their perceptions of the activity, subject, or occupation. The inventory is easily administered to an individual or group. The directions for test administration are clearly stated and the test booklet is well designed and easy to score. It can be self-administered and self-scored in approximately 40 minutes, thus providing immediate feedback to the individual completing the inventory. The manual and test booklet provide additional information relating test results to the *Dictionary of Occupational Titles* (DOT). The test is also available in a Spanish translation.

USE IN COUNSELING

As stated in the test manual (Johansson, 1990), "IDEAS is intended to be used in a career introduction unit and as a career exploration vehicle." As such, the purpose of the instrument lends itself well to administration during the middle school, junior high and early high school years. One possible application that was envisioned when IDEAS was developed, was the use of the instrument in "conjunction with career programs and guidance units in social studies or civics courses." This would appear to be a very functional manner in which to integrate the use of the instrument into existing school curricula. The manual provides procedures for calculating the relationship of the individual's scores to the Holland theoretical vocational model interest domains: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional (R-I-A-S-E-C) (Holland, 1975).

When administering this test, special considerations should be provided to students with low reading ability, visual limitations, learning disabilities, or limited English proficiency. For these students, the test format may be difficult without appropriate accommodations. These accommodations may include providing the test in an oral format, taping the test for non-readers, or providing a scribe to record answers and score the test.

TECHNICAL CONSIDERATIONS

A profile of high and low interest is created as the respondent converts raw scores into standard scores with the instructions included in the test booklet. Three norm tables are provided. These norm tables are for grades 7–9, 10–12, and adults. Norms for males and females are not included; based on a concern for sex stereotyping. As a result, the test booklet norms are based on a composite average of an equal representation of females and males. The test manual does, however, include information relating the individual's score to the average ranges for males and females for each of the corresponding norm tables.

Sex equity and concern for minority representation were issues addressed in the test manual. The sample for standardization was quite adequate and included: grades 7–9 (N = 1,770; 950 females, 820 males); grades 10–12 (N = 2,891; 1,683 females, 1,208 males); adults (N = 900; 450 females, 450 males). Separate female and male data were statistically weighted to provide equal representation. Minority representation in the sample was addressed. At least 7.8 percent of the adult sample, 15 percent of the grade 10–12, and 45 percent of the sample for grades 7–9 were minorities including African Americans, Hispanic, Asian, and American Indians.

Test-retest correlations were included for one week, two weeks, and 30 days to document the reliability of the interest inventory over time. The reliability was generally good (.75 and above); however, limitations of these data should be considered. First, no information was included regarding the reliability of the instrument for junior high school aged students (grades 7–9). The reliability study contained mostly high school and college student, with the remainder being employed adults. Second, the number of persons included in the reliability study were very small (one week, N = 54; two weeks, N = 31; 30 days, N = 42). Hopefully, these limitations will be addressed in future revisions of the inventory. Internal consistency reliabilities were computed for each scale and were all in the .80s and low .90s.

Validity of IDEAS was assessed by three methods: content, construct, and concurrent. Content validity was well addressed in the manual. Information regarding item-scale correlations was presented for each of the 16 scales and were separated by gender, race, and grade level. Data across the demographic samples consistently reflected adequate internal consistencies for each scale regardless of gender, race, or age. To determine concurrent validity of the IDEAS scales, data from over 100 samples of students in career programs and adults in occupations were used. While the test manual reports overall good concurrent validity for the scales of the IDEAS inventory, statistical information regarding the sample was incomplete. To support the construct validity of the inventory, correlations were computed between IDEAS and similarly named scales of the Strong Interest Inventory. The coefficients for this comparison were quite high, .80s and above. However, neither the number nor the names of the scales used in this comparison were included in the test manual. The test manual also presents correlations between IDEAS and the CAI. While the correlations were very high, this information would seem to be of limited value since the IDEAS scales are based on items directly from the CAI. Finally, to support construct validity of the instrument, intercorrelations were presented between Holland's six interest domains and the IDEAS scales. Overall, the intercorrelations among scales in the same interest domain in Holland's model were moderately high (.40s to .60s), and the correlations with other scales outside the interest domain were lower (.00 to .40s). These data generally support the construct validity of the instrument.

OVERALL CRITIQUE

In conclusion, IDEAS is a well-designed and well-researched interest inventory. Although special accommodations should be considered when administering the instrument to special populations, the test is generally easy to administer, easy to score and easy to interpret. Great care has been taken to address sex equity and inclusion of minority populations in the norming of this edition of the instrument. Information concerning the validity of the inventory is adequate. However, additional information concerning reliability of the inventory for junior high aged groups is needed. The IDEAS is an adequate instrument and a valuable tool for career awareness and career exploration.

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Johansson, C. B. (1990). *Manual for IDEAS: Interest, Determination, Exploration and Assessment System.* Minneapolis, MN: National Computer Systems.

NOTE: Portions of this review were abridged from the first author's original review in the *Eleventh Mental Measurements Yearbook* with permission of the Buros Institute.

Jackson Vocational Interest Survey (JVIS)

Douglas N. Jackson

Sigma Assessment Systems, Inc.
1110 Military Street, P.O. Box 610984
Port Huron, MI 48061-0984

Target Population: Senior High School, College & University, Adult.

Statement of the Purpose of the Instrument: The JVIS provides comprehensive information relevant to educational and career planning and decision-making. Its development incorporated the most careful psychometric procedures and standardization on large, diverse samples. The extended report provides an unusually wide variety of information.

Titles of Subtests, Scales, Scores Provided: The report contains a variety of types of scales and profiles: 10 General Occupational Themes, 34 Basic Interest Scales, Administrative Indices, Similarity to University Academic Majors, Similarity to Occupational Clusters.

Forms and Levels Available, with Dates of Publication/Revision of Each: Items revised 1990.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1977.

Languages in Which Available: English, French, Spanish—Booklet only.

Time: Actual Test Time:
Total Administration Time: 45–60 minutes.

Norm Group(s) on Which Scores Are Based: High School and college students.

Manner in Which Results Are Reported for Individuals

Types of Scores: Percentile ranks, standard scores, similarity coefficients and rankings.

Report Format/Content

Basic Service: Profiles as listed above.

Options: Extended report containing profiles and scores listed above as well as narrative material describing the highest occupational clusters, and an extensive listing of books relevant to highest occupational clusters.

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service

Cost of basic service per counselee: Basic Report $5.00 for single report, $3.80 for 20 or fewer, with quantity prices as low as $3.00 for 110 or more.

Cost of Options: Extended Report $9.00 for single report, $7.60 for 20 or fewer with quantity prices as low as $4.90 for 110 or more.

Time required for scoring and returning: 48 hours plus 1st class mail time.

Hand-Scoring

Scored by: counselee; clerk; counselor.

Time required for scoring: 10–15 minutes. Basic Interest Scales only.

Local Machine Scoring:

Provisions/conditions/equipment required: NCS or Scantron scanner and IBM compatible computer. Scoring controlled by parallel port plug.

Computer Software Options Available: Standard administration on-line.

Ways in which computer version differs: Extended narrative report may be generated immediately. Profile Report is not available in software version.

Cost of Materials

Specimen Set: Examination kit includes manual, machine scorable answer sheet for Extended Report, reusable test booklet, hand scorable answer and profile sheets—$19.00.

Additional Comments of Interest to Users: JVIS Applications Handbook is now available—price—$24.95.

Published Reviews:

Brown, D. T. (1989). Review of the Jackson Vocational Interest Survey. In J. C. Conoley & J. J. Kramer (Eds.), *Tenth mental measurements yearbook*. Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

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Jepsen, D. A. (1992). Review of the Jackson Vocational Interest Survey. In D. J. Keyser & R. C. Sweetland (Eds.), *Test critiques IX*. Austin, TX: PRO-ED.

Shepard, J. W. (1989). Review of the Jackson Vocational Interest Survey. In. J. C. Conoley & J. J. Kramer (Eds.), *Tenth mental measurements yearbook*. Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

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DESCRIPTION

The Jackson Vocational Interest Survey (JVIS) measures vocational interests by scaling preferences between pairs of statements about work-related activities and work situations. It was designed principally "to assist high school and college students and adults with educational and vocational planning" (Jackson, 1977). At the time it was released in 1977, JVIS was acclaimed for several unique features among interest measures including: (a) a theory-grounded approach based on a reconceptualization of occupational preferences in terms of *both* work roles *and* work styles, (b) sophisticated statistical strategies for scale development, (c) equal emphasis on application to males and females, and (d) an efficient, convenient scoring format open to user inspection. A revised JVIS manual and report form will be published in late 1993.

The JVIS is the product of applying innovative multivariate statistical procedures to test development in the interest domain. Psychological theory and substantive item content were utilized in formulating a multifaceted item pool. An exemplary approach to suppressing item response biases applied two methods: (a) statistical manipulations to correct for a general like-dislike response bias and (b) the forced choice format.

Test takers are required to select the more interesting or preferred statement between 289 pairs of statements about "work-related activities." Items are written at about the seventh grade reading level, but some clearly require a more advanced conceptual background. Test takers are asked to consider only their preferences, regardless of the training or experience required for the activities. Although laudable steps were taken to "purify" item statements, the choice is sometimes between two very different kinds of statements, for example, activities vs. environments.

There are two answer and report forms depending upon whether the test is scored manually or by computer. A new format for report forms will be available in late 1993. Both forms report scores on 34 Basic Interest scales. The extended score report form generated by computer scoring contains six administrative response scales, an academic orientation scale, indices indicating similarity to 17 university major field clusters and 32 occupational classifications, and detailed descriptions of the three highest-ranked occupational clusters. Since item arrangement was critical for constructing the hand-scored form, statements from the same scale appear in consecutive items which effects the test-taker's "set." There is an obvious pattern in statements listed as option A and those listed as option B such that there is a strong possibility of a positional response set (Juni & Koenig, 1982).

The JVIS is usually completed within 45–60 minutes. Handscoring the JVIS is time-consuming, detailed work, but imposes no great conceptual demands on the scorer. The scoring system is not protected and allows users to inspect the statements making up each scale and form their own insights about inventoried interests.

Thirty-four Basic Interest (BI) scales are based on separate activity statements and are relatively independent; therefore, each is considered to be interpretable in its own right. Eight BI scales reflect Work Style preferences while 26 BI scales assess Work Role preferences. Interests are construed as pertaining to both the activity and the situation. Work Style scales indicate "preferences for working in a certain kind of environment or working in a situation in which a certain mode of behavior is a norm" (Jackson, 1977, p. 3). Examples of work style scales are: Dominant Leadership, Job Security, Stamina, and Accountability.

Work Role scales reflect preferences for on-the-job activities associated with a certain group of occupations. Examples of these scales are: Creative Arts, Performing Arts, Mathematics, Physical Science, Engineering, Life Science, Social Science, and Adventure. The Basic Interest scales are grouped by substantive similarity; for example, Creative Arts and Performing Arts are under "The Arts."

The General Occupational Themes (GOT) are 10 distinct broad patterns of interests (rather than interests in specific activities): Expressive, Logical, Inquiring, Practical, Assertive, Socialized, Helping, Conventional, Enterprising, and Communicative. Six Administrative Indices (AI) aid in detecting reasons for caution or confidence in profile interpretations. An Academic Orientation (AO) scale, the one non-occupational scale, estimates the degree of satisfaction in traditional academic settings.

Scale scores are based on frequency of selecting statements representing each scale. This ipsative scoring procedure means that one scale is given a point while the other scale is not given a point when there is an opportunity for adding to either score. Statements representing each scale are paired with statements from only 16 of the 33 other scales; for example, the statements about teaching are compared with business, but not with science and mathematics statements. Precise interpretation of scale scores would emphasize that the score for a given scale; for example the teaching scale, is derived from *some*, but not *all*, choices between the interest areas represented by the 33 scales.

USES IN COUNSELING

The JVIS is designed to help people discover their work-related interests and to assess their probable satisfaction in different academic and occupational roles. It is designed for use by high school and college students and adults, especially those considering choices of educational programs or occupations.

The 1977 Manual suggests a three-level profile interpretation: (1) examining individual high and low scales, (2) considering the entire configuration of BI scale scores in relation to profiles for occupational clusters and individual occupations, and (3) integrating the first two steps with other client information.

Similarity scores compare the person's BI profile with the profiles of two sets of specified criterion groups: college students in 17 major fields and working adults in 32 occupational clusters. The BI scale scores are used to predict scores on the 32 occupational clusters and 189 male and 89 female occupational groups. Tables of mean predicted JVIS standard scores for these occupational groups and bar graphs for 52 occupational groups are available in the Manual as interpretive aids.

TECHNICAL CONSIDERATIONS

The original norms group was equally weighted from three samples: (a) students in U. S. and Canadian colleges and universities, (b) high school senior applicants to one large state university system, and (c) high school students in Ontario. New norm groups will be included in the 1993 revised manual. In the meantime counselors using the JVIS with adults and others who differ from this group (e.g., people from Latino cultures, people with disabilities, people with limited education or economic means) will need to exercise caution in generalizing to their clientele.

Scale reliability was supported by test-retest and internal consistency estimates. The median one-week test-retest reliability coefficient across 34 BI scales was .84 with a range from .72 to .91 and the 10 GOT scales ranged from .82 to .92 with a median of .89. Basic Interest scale *profile* stability, assessed by intercorrelation of two profiles two weeks apart for each person, yielded a median correlation of .87; the median correlation of GOT profiles was .94. Internal consistency was high for a large sample. A distribution of the individual reliability index coefficients (*R*), an odd-even reliability estimate computed for each student's BI profile, showed most were over .70.

The JVIS scale validity claims rest largely on evidence supporting construct validity for the Basic Interest scales, especially the careful scale development. Jackson, Holden, Locklin and Marks (1984) found highest interest profiles for 17 academic major clusters were obtained on substantively related JVIS BI scales; for example, the Elementary Education and Teaching scales are the most highly associated with the education major.

Concurrent validity evidence was obtained from correlations between scores on JVIS BI scales and SVIB Basic Interest scales. Generally scales sharing the same name were highly correlated; for example, SVIB Mathematics and JVIS Mathematics (.72 for males and .58 for females), and SVIB Art and JVIS Creative Arts (.47 for males and .45 for females). Convincing concurrent predictions for choice of one of eight academic colleges (e.g., Arts and Architecture, Business, and Liberal Arts) were found among entering college freshmen.

OVERALL CRITIQUE

The major limitations of the JVIS are: (a) sparse theoretical background for the work style scales, (b) item content and arrangement creating problems for test takers and interpreters, (c) limited norms group descriptions and data, (d) lack of longitudinal predictive validity, and (e) the lengthy time required for taking and interpreting the test.

The special strengths of the JVIS, especially as compared to other interest inventories, are: (a) the handscoring option and the ease of content interpretations of work-role scales using scale descriptions and their item statement content as well as the normative tables, (b) the scale norming which allows comparisons across occupations and majors, (c) the extraordinary attention to response bias and scale-activity correlations in scale construction, (d) the ingenious methods for relating JVIS scores to SVIB archival data, and (e) breadth in coverage of the vocational interest domain and the relatively homogeneous interest scales.

The JVIS seems best suited for counseling with persons who have the motivation, skill and time to acquire a comprehensive view of their vocational interests. For those who extend these extra efforts there is the possibility of achieving greater breadth and depth in understanding the nature of their interests than there is with other inventories.

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NOTE: Portions of this review were abridged from the author's original review in Volume IX of *Test Critiques* with permission of Pro-Ed of Austin, TX.

Kuder General Interest Survey, Form E (KGIS)

Frederic Kuder

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20 Ryan Ranch Road
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Target Population: 6th to 12th grade students, adults re-entering school or the work force.

Statement of the Purpose of the Instrument: Assess interests in order to help students select educational courses and begin exploring potential careers.

Titles of Subtests, Scales, Scores Provided: Verification (V), Outdoor, Mechanical, Computational, Scientific, Persuasive, Artistic, Literary, Musical, Social Service, and Clerical. Also provides 3-letter RIASEC code.

Forms and Levels Available, with Dates of Publication/Revision of Each: Form E, 1988.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1988.

Languages in Which Available: English.

Time: Actual Test Time: No time limit.
Total Administration Time: 45–60 minutes.

Norm Group(s) on Which Scores Are Based: Males and females, grades 6–8 and grades 9–12.

Manner in Which Results Are Reported for Individuals

Types of Scores: Percentile scores grouped in high, average, and low ranges, for own and other gender. V-scale is a raw score.

Report Format/Content

Basic Service: Narrative for machine scored; profile for hand-scored. All accompanied by interpretive leaflet.

Report Format/Content for Group Summaries

Options: Not available.

Scoring

Machine Scoring Service

Cost of basic service per counselee: Cost included in purchase price.

Time required for scoring and returning: 48 hour turn-around at CTB, plus transportation to and from.

Hand-Scoring

Scored by: counselee, clerk, or counselor.

Time required for scoring: Variable, approximately 10 minutes.

Local Machine Scoring: Input from NCS 3000 scanner, can be edited, interfaced with MS-DOS machine, to printing device.

Computer Software Options Available: None available.

Cost of Materials [1992 Prices]

Specimen Set: $8.00

Counselee Materials: Hand-scored edition: packages of 25 consumable booklets and answer pads, and 25 interpretive leaflets, $47.00, with discounts up to 25 percent for purchases of 20 or more packages.

Locally machine-scored edition: Packages of 25 consumable test and answer sheet booklets and 25 interpretive leaflets, mail-back materials, and scoring service, $42.75, with same discount schedule as above.

CTB-scored edition: packages of 25 consumable test and answer sheet booklets, 25 interpretive leaflets, mail-back materials, and scoring service, $75.50, with same discount schedule as above.

Additional Comments of Interest to Users: A supplemental Job and College Major Chart keys interest areas to nearly 600 job titles and 100 College Majors.

The predecessor Kuder Preference Record, Form C, is also available for purchase.

Published Reviews:

Kirk, B. A., & Frank, A. C. (1982). Review of the Kuder General Interest Survey, Form E. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to vocational guidance instruments*, (pp. 73–76). Falls Church, VA: National Vocational Guidance Association.

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DESCRIPTION

The Kuder General Interest Survey Form E (KGIS) is an interest inventory that has evolved from previous Kuder vocational interest inventories over a period of 50 years. The first Preference Record was published in 1939 and yielded seven scores. It was followed by the Preference Record (Forms B and C). The KGIS-Form E has been developed to be used with younger people than previous editions and the publishers consider it appropriate for students at the junior high school level. Form E uses 18 triads directly from Form C, 106 Form C triads restated in simplified vocabulary and 44 new triads.

The latest version of the KGIS was published in 1988. It produces vocational scores on the same 10 general interest areas of Form C: Outdoor, Mechanical, Computational, Scientific, Persuasive, Artistic, Literary, Musical, Social Service, and Clerical. Also, Holland (RIASEC) codes have been provided. As with other Kuder interest measures, a verification scale is provided.

The KGIS is available in three versions: a hand-scored version, an SRA-scored version, and a locally computer-scored version. It contains 168 questions. Each question consists of three activities and the test taker is to choose which activity is preferred most, and which activity is preferred least, for example, "Visit an art gallery," "Browse in a library," "Visit a museum."

USE IN COUNSELING

The purpose of the KGIS is to stimulate career exploration in broad interest areas and suggest career possibilities. The "preliminary edition" of the *General Manual* states that the KGIS "is to stimulate career explorations and suggest career possibilities—to open up options rather than limit them" (SRA, 1988, p. 4). The manual further states that the KGIS "is intended to be used as a part of a comprehensive exploration program that will provide students and counselees with a foundation for making the many varied important decisions that compose careers" (p. 10). The manual stresses that the KGIS should not be administered without "provisions for" either individual or group interpretation sessions, although it also suggests that "for many, the interpretive leaflet that is supplied with the narrative report is sufficient" (p. 10) as long as the counselor checks to make sure the students or counselees understand the information provided.

The RIASEC scores are available and are based on Holland's (1970) view regarding which of the Kuder scales he considers equivalent to his six personality types. The General Manual mentions a 1979 Holland reference as providing some supporting data for his views regarding equivalence, but does not discuss this reference or the data in any fashion or even provide the full reference in its list of references. Basically, for the KGIS, R is the average of the percentiles on Outdoor and Mechanical, I is the percentile for Scientific; A is the average of Artistic, Musical and Literary percentiles; S is the Social Service percentile; E is the Persuasive percentile; and C is the average of the Computational and Clerical percentiles. The manual emphasizes these are estimates "owing to the impropriety of performing arithmetic operations on percentiles" (p. 18). Quite apart from averaging percentiles, there is little evidence the RIASEC codes fit the KGIS scales.

The General Manual informs the reader that a *Job Chart* and a *College Majors Chart* are available. There is some very general advice in the manual on how to use these and other supplementary materials.

TECHNICAL CONSIDERATIONS

Norms were gathered for the machine-scored edition of the KGIS from a sample of students in grades 6 through 12 from the Spring of 1986 to the Spring of 1987. The *General Manual* describes the sample as "a total of 13,007 students in 76 elementary, middle, junior and senior schools from 45 cities in 18 states" (p. 23). There were 2,714 males and 3,180 females in grades 6–8 and 3,402 males and 3,711 females in grades 9–12. Separate norms tables are provided for those four categories. The manual gives the percentage breakdown according to four major geographic areas, but does not provide demographic information for the students. The manual states that information will be summarized in the "final" version of the manual. Unfortunately, the only manual available is the 1988 "preliminary" edition. According to an informed source, the demographic information was not preserved and there has been no production undertaken for an updated manual (Zytowski, 1993, personal communication).

Users of the KGIS should thus understand that no information is available on the social class, economic class, or ethnicity of the norm group and there is no way to determine the appropriateness of the current norms for various social class or ethnic groups. Also, grouping the 9th through 12th graders into the same norms table allows only a norm referenced comparison against a fairly broad grade range. Finally, it should be mentioned that while there were original plans to develop college or adult norms, that has not taken place.

Test-retest reliabilities (within a two-week period) are provided. These correlations are mostly in the .70s and .80s and are somewhat higher for senior high school students than junior high school students. The lowest reliability reported is .64 for males in grades 6–8 on the Clerical scale. While these reliabilities are sufficiently high for the proposed purpose of using the inventory to encourage career exploration, both counselors and students need to understand the limitations of using the data for career decision making. Form C had stability data over a four-year period for a small sample of students initially tested in the sixth or seventh grade. These correlations were primarily in the .40s and .50s demonstrating that the scores are not very stable at this age. There are no stability data on Form E, although there is no reason to believe it would be any less or more stable.

The manual reports the intercorrelations of the 10 scales as well as the publisher's interpretation of the impact of the ipsative nature of the scales on these intercorrelations. The manual suggests that the KGIS "is ipsative only in the limited sense that some triads are indeed scored for more than one scale" (p. 7). It seems strange that the manual does not say exactly how many triads are so scored. It does say that the "number of items contributing to some of the scales has been increased . . . without, however, changing the number of items in the total inventory" (p. 4). Thus, KGIS, Form E, is more ipsative than its predecessor. The manual reports on the intercorrelations of 10 of the *Strong* scales considered to be most comparable to the KGIS scales, and suggests they are similar to the KGIS intercorrelations. There were several large discrepancies between the Strong and the KGIS intercorrelations on what were supposedly similarly matched pairs.

The validity data are quite scant. A small sample of students who took the KGIS also took Holland's *Vocational Preference Inventory*. The correlations between the six Holland scales and the 10 KGIS scales are presented in the manual. The correlation patterns are generally what one would expect. For example, the correlation between the Holland Realistic scale and the KOIS Outdoor scale is .35 and between the Realistic scale and the KOIS Mechanical scale is .63. No other KGIS scale had a positive correlation above .20 with the Realistic scale.

There is no information regarding whether students who take the KGIS actually engage in more career exploration activities than comparable students who do not take the KGIS. Given that the purpose of the inventory is to encourage career exploration, it would seem that such information would be useful—if not essential.

OVERALL CRITIQUE

The KGIS is a popular instrument and it probably does stimulate career exploration. It is unfortunate that the preliminary manual has not been updated and that further research has not been conducted regarding the validity of the instrument for the purposes proposed.

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Holland, J. L. (1970). *Manual for the Vocational Preference Inventory* (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.

Science Research Associates. (1988). *Kuder E General Interest Survey general manual (Preliminary edition)*. Chicago, IL: Author.

Kuder Occupational Interest Survey, Form DD (KOIS)

Frederic Kuder

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Target Population: Grades 10–12 and college students, adults making career changes or re-entering school or the labor force.

Statement of the Purpose of the Instrument: Assesses interests to assist in selecting college majors and identifying potential careers.

Titles of Subtests, Scales, Scores Provided: Verification (V) score.
Vocational Interest Estimates: Outdoor, Mechanical, Computational, Scientific, Persuasive, Artistic, Literary, Musical, Social Service, and Clerical.
Occupational Scales: 109, of which 33 are normed on both male and female criterion groups, 32 on male groups only, and 11 on female groups.
College Major Scales: 40, of which 14 are normed on both male and female groups, 8 on male groups only, and 4 on female groups.
Experimental Scales: 8.

Forms and Levels Available, with Dates of Publication/Revision of Each: Form DD, 1985.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1991.

Languages in Which Available: English.

Time: Actual Test Time: Untimed.
Total Administration Time: 30–40 minutes.

Norm Group(s) on Which Scores Are Based: *Vocational Interest Estimates:* 1,583 males, 1,631 females selected from high school, college, and private agency users.
Occupational Scales: Groups of 200 or more males or females, age 25 or over, self-identified as employed at least three years in their occupation, and satisfied with their occupational choice.
College Major Scales: Groups of 200 or more males or females, in their junior or senior years of a nationally-distributed sample of college and universities.

Manner in Which Results Are Reported for Individuals

Types of Scores: Vocational interest estimates are reported in percentiles, grouped in high, average, and low ranges, for own and other genders. Occupational and College Major Scales are scored by lambda coefficients, which are similar to correlations.

BEST COPY AVAILABLE

Report Format/Content

Basic Service: V-score and other data are combined into an individual "Dependability Statement." Individualized report incorporates computer-printed rank-ordered scales on a preprinted narrative form. Two copies are given: one for inventory-taker shows no numerical data; counselor copy includes all scores.

Report Format/Content for Group Summaries

Options: Not available.

Scoring

Machine Scoring Service

Cost of basic service per counselee: Cost included in purchase price.

Time required for scoring and returning: 48-hour turn-around at CTB, Monterey, CA, plus transportation to and from.

Hand-Scoring: Not available.

Local Machine Scoring: See computer software options available.

Computer Software Options Available: The KOIS DD/PC is computer-administered; that is, items are presented on-screen and responses made on the computer keyboard, obviating the need to fill in bubbles and saving approximately 20 minutes of administration time. The inventory is scored within a few seconds of the final response and results are presented on-screen or in print copy, as requested. A unique feature tracks the development of the V-score and, if it falls below expected levels, asks the survey-taker if they wish to reconsider any of their previous responses. In addition, the DD/PC version asks survey-takers what they wish to discover from their interest inventory, (identify possible occupations or college majors, confirm a tentative choice, or other) and at the end of the profile asks the degree to which the survey was responsive to their expressed wish. This latter item is intended to generate an appropriate user set, and to provide information that may be useful to the counseling process.

Cost of Materials [1993 Prices]

Specimen Set: $8.00

Counselee Materials: Packages of 20 consumable test booklets-answer sheets, mail-back materials, and scoring service, $87.95, with discounts up to 25 percent for purchases of 20 or more packages. Microcomputer Administration and Scoring Software, $55.00 for 10 uses, $125.00 for 25 additional uses.

Additional Comments of Interest to Users: An optional software package, "Fast Facts," provides online interactive information on all occupational and college major scales for instant look-up and print out.

Published Reviews:

Brown, F. G. (1982). Review of the Kuder Occupational Interest Survey, Form DD. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to vocational guidance instruments* (pp. 77–80). Falls Church, VA: National Vocational Guidance Association.

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DESCRIPTION

The current form of the Kuder Occupational Interest Survey (KOIS, Form DD) is a revision (1985) of the 1979 edition of the Kuder Occupational Interest Survey. Both the format and individual items are similar to the 1979 version. The KOIS is designed for use with high school students (10th grade and beyond), college students, and adults of all ages. According to the 1991 General Manual, the KOIS is "intended for use in career counseling or career exploration to enhance self-knowledge and understanding, reduce possibilities to a manageable few, and suggest new alternatives" (p. 10).

The KOIS, Revised Form DD, is comprised of 100 forced-choice triads written in sixth grade reading vocabulary. For each triad, the subject indicates the most preferred and least preferred activity from among such choices for a specific item as visit an art gallery, browse in a library, or visit a museum. The pattern of responses from the inventory is compared to patterns of responses of individuals in 40 college majors and in 109 occupational groups who have met such criteria as have been employed in their occupation for three years and report that they are satisfied with their occupation. The KOIS Report Form gives the subject information in four areas: Dependability, Vocational Interest Estimates (VIE), College Majors, and Occupations. The Counselor's Form also includes information on eight experimental scales: Men and Women (M, W); Best Impression (MBI, WBI); Sons and Daughters (S, D); Fathers of the Sons, Mothers of the Daughters (F, Mo). These scales are in a very early form and their use is not clearly described in the manual.

The Dependability Scale provides information in narrative form indicating which scores may be unreadable or otherwise problematic to interpret. The Dependability Scale is based primarily on the Verification scores used in earlier forms to identify inventory-takers who attempt to fake good responses or respond randomly. The Vocational Interest Estimates section of the report form provides percentile ranks of the respondent's patterns of interests compared with both male and female groups in 10 interest areas, for example, scientific, clerical, or mechanical. The 1991 General Manual also provides a process by which to convert KOIS scale scores to Holland codes.

In both the Occupations and the College Major Scales, numerical scores are Lambda coefficients, indices of how similar the inventory-taker's responses are to those of each occupation or college major criterion group. A rank order of scores begins with those scales in the top .06 of the Lambda score range for the individual inventory-taker; these are recommended for primary consideration as options consistent with a student's interest patterns. Based upon Lambda score ranges of .06, the second group is identified on the Survey Report Form as "These are next most similar" and the third category includes those scales that are more than .12 Lambda units from the highest in the list.

USE IN COUNSELING

A number of resources providing descriptions of the rationale, administration, interpretation, and development of the KOIS are available, including the original *General Manual* (Kuder & Diamond, 1979), the *General Manual and Manual Supplement* (Zytowski, 1985), the updated *General Manual* (Kuder & Zytowski, 1991), and a text, *Activity Interests and Occupational Choice* (Kuder, 1977), which discusses the construction of the KOIS and score interpretation. In addition, an audiotape explaining interpretation of the inventory is available for use with individuals or groups. Also available are a booklet and worksheet, entitled *Expanding Your Future*, designed to assist the inventory-taker to identify additional occupational possibilities from their high-ranking KOIS scales. This booklet has not been revised since the 1979 version of Form DD, so there are some needed changes in scale titles and the elimination of others that are now obsolete in contemporary usage. A revision of the booklet and workbook to make it congruent with the 1985 version would make this information more useful. The Survey Report Form provided to the inventory-taker and the additional information provided to the counselor are much improved in the 1985 version, with more comprehensive explanatory information on the form itself and in supplementary material available.

TECHNICAL CONSIDERATIONS

Reference groups for the KOIS are made up of 109 occupational groups (with 65 male and 44 female norm groups) and 40 college major groups (22 male and 18 female norm groups). Thirty-three occupations and 14 college majors have both male and female norm groups. The comparison of the inventory-taker's scores to those of criterion groups of persons in college majors or occupations, rather than in the general population, has increased the differentiation among groups as compared to inventories prior to 1985.

The General Manual reports results of a number of test-retest reliability studies in the .90s for the College Major and Occupational Profiles. Reliable differences between scores on each pair of scales are also adequate. As Jepsen (1988) has noted, the reliabilities for the VIE scales are more modest (.70–.84) and may be a function of these scales being quite short. In general, the existing studies support the reliability of KOIS test scores. However, as previous reviews (Herr, 1989; Tenopyr, 1989) have noted reliability studies on more scales and with more subjects are in order.

Concurrent validity is the primary form of validity reported. While the coefficients reported are supportive, they are based on only 30 of the 143 existing College Major and Occupational Scales chosen as representative. Thus, the substantial concurrent validity reported is actually a selective portrayal of such validity. Two predictive validity studies are also reported in the manual. Zytowski (1976) followed up 882 subjects 12–19 years after taking the Kuder Preference Record-Occupational, containing the same items as the KOIS. Results showed that 51% of the subjects were employed in occupations that would have been suggested to them by KOIS scales. Zytowski and Laing (1978) followed up 206 subjects who had taken the Kuder Preference Record-Occupational 12 to 19 years earlier and who were in occupations that could have been predicted by the 28 KOIS twin scales. Results showed that the 43% of the subjects were in one of the top five predicted occupations by same gender norms and 51% of the subjects were in one of the top five predicted occupations by other gender norms. In the studies which report predictive validity, the criteria are occupational membership and occupational entry, not occupational satisfaction as is sometimes suggested by KOIS information (e.g., page 5 of the 1991 General Manual).

COMPUTER-BASED VERSION

The KOIS DD/PC, a software version for MS-DOS computers, was issued in early 1993. It presents items on-screen and accepts keyboard responses, reducing administration time to 20–30 minutes for most respondents, and scoring time to less than a minute. It also accepts responses scanned from the pencil-and-paper edition.

A unique feature tracks the V-score as responses are made and asks the survey-takers if they want to reconsider their previous responses if the V-score falls below minimum levels. A query at the beginning of the program asks survey-takers about their purpose in taking the inventory, attempting to generate an appropriate mental set for the survey-taker and provide information that may be useful in the counseling process.

A supplemental software package incorporates an occupational information source which is presented on-screen for all of the occupational and college majors on the profile. Survey-takers may input ratings of their present or expected skill levels and their income and educational attainment expectations to further refine the occupational or college major hierarchies generated from their interests.

Results of research on the equivalence of the pencil and paper and computer-based versions are expected to be available soon after publication of this review.

OVERALL CRITIQUE

The KOIS Form DD is a much more useful instrument than previous forms of this inventory. Additional research is reported in the manual, the Survey Report Form is much improved, the supplementary materials offer clear and useful explanations of scale scores, and the KOIS can be readily used in conjunction with the Holland Codes, the *Dictionary of Occupational Titles*, and the *Occupational Outlook Handbook*. Although less selective studies of the concurrent validity of KOIS scales, more current test-retest reliability studies of time intervals longer than two weeks, and care that explanatory materials do not suggest that KOIS scores measure or predict job satisfaction are warranted, the KOIS continues to be an important and effective instrument.

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NOTE: Portions of this review were abridged from the first author's original review in the *Tenth Mental Measurements Yearbook* with permission of the Buros Institute.

Ohio Vocational Interest Survey, 2nd Edition (OVIS II)

The Psychological Corporation
555 Academic Court
San Antonio, TX 78204-2498

Target Population: 7th grade through adults.

Statement of the Purpose of the Instrument: OVIS II is designed to assist students from grade 7 through college and adults, with their educational and vocational plans. OVIS II combines an interest inventory with an optional Career Planning Questionnaire and Local Survey to provide the student and counselor with background data for interpreting interest scores and to provide the school with summary data for planning guidance services and curriculum changes.

Titles of Subtests, Scales, Scores Provided: OVIS II is based upon the premise that every occupation requires some degree of interaction with data, with people, and with things. The levels of involvement serve as the basis for grouping occupations into clusters, and OVIS II has 23 clusters that lend themselves to career exploration. The 23 clusters are as follows: Manual Work; Basic Services; Machine Operation; Quality Control; Clerical; Health Services; Crafts and Precise Operations; Skilled Personal Services; Sports and Recreation; Customer Services; Regulations Enforcement; Communications; Numerical; Visual Arts; Agriculture and Life Sciences; Engineering and Physical Sciences; Music; Performing Arts; Marketing; Legal Services; Management; Education and Social Work; Medical Services. These are the interest scales. The interest score represents the strength of the student's liking the activities in the interest scale. Other scores available are the weighted response, scale clarity index, and percentile ranks (same-sex and opposite-sex).

Forms and Levels Available, with Dates of Publication/Revision of Each: Student booklets published in 1981; One form and one level.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: Manual for Interpreting 1983, David W. Winefordner, Career Guidance Consultant.

Languages in Which Available: English.

Time: Actual Test Time: Approximately 30 minutes, untimed.
Total Administration Time: Approximately 30 minutes, untimed.
Microcomputer Version: 30 minutes.

Norm Group(s) on Which Scores Are Based: 46,000 students enrolled in grades 7–12. Percentile ranks are reported separately for males and females in grade groups 7 through 9, 10 through 12, and college.

Manner in Which Results Are Reported for Individuals

Types of Scores: Percentile Ranks, Scale Clarity Index, Weighted Response, and Interest Score.

Report Format/Content

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Basic Service: Student Report (2 copies) MRC; Answer Documents.

Options: Extra Student Report; Career Planning Questionnaire Summary Report; Record Label; Local Norms; Magnetic Tape.

Report Format/Content for Group Summaries

Basic Service: Not available.

Options: Group Guidance Report (Measured Interest, Expressed Interest, or Vocational Program Choice); Local Survey Summary Report; Local Norms; Magnetic Tape.

Scoring

Machine Scoring Service: (Prices valid through December 31, 1994).

Cost of basic service per counselee: Two copies of Student Report $4.17.

Cost of Options: Group Guidance Report $.58; Career Planning Questionnaire Summary Report $.51; Local Survey Summary Report $.57; Local Norms $.34; Record Label $.55; Magnetic Tape $.34.

Time required for scoring and returning: 21 calendar days.

Hand-Scoring

Scored by: counselee, counselor.

Local Machine Scoring:

Provisions/conditions/equipment required: Equipment with the capability to score MRC or NCS answer documents and written permission from The Psychological Corporation.

Computer Software Options Available: Scoring; interpretation; group summaries; standard administration on-line. Apple II, Apple II+ or Apple IIe with 48K memory, two disk drives and a printer.

Ways in which computer version differs: No basic service scoring charge as on publisher scoring, flexibility in administration, instant scoring.

Cost of Materials (Prices valid through December 31, 1994).

Specimen Set: Examination Kit $16.00.

Counselee Materials: *Test booklets (package of 35) Includes Directions for Administering = $65.50 hand-scorable answer documents (package of 35) = $65.00; MRC Machinescorable answer documents (package of 35) = $40.50; NCS Machinescorable answer documents (package of 35) = $41.50; Norms and Scale Clarity Tables = $19.50; Career Planner (package of 35 = $40.50; *Handbook for Exploring Careers = $14.50; *Manual for Interpreting = $30.50; Pretest Workshop Kit and Posttest Workshop Kit = $128.50 each; *Introduction to Interests (package of 35) = $13.00; Preview for Parents (package of 35) = $13.00; Interpreting Your Student Report (package of 35) = $13.00; Parent Guide to Understanding OVIS II Results (package of 35) = $13.00; *Guide for Career Decision-Making (package of 35) = $13.00; *Filmstrips *Your Interests* = $80.50; **Interpreting OVIS II* = $80.50.

* Indicates reusable.

Additional Comments of Interest to Users: Complete package: Survey Master and Work Diskettes, Reporting Master and Work Diskettes, Utility Diskette, Analysis Diskette, 35 Student Information Booklets, Administrator's Manual. The package permits local scoring of up to 35 records = $211.00. Replacement package includes analysis diskette and 35 student booklets = $120.00. Prices valid through December 31, 1994.

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DESCRIPTION

The Ohio Vocational Interest Survey, 2nd edition (OVIS II), is an interest inventory with 253 items describing work activities. The first edition of the OVIS expanded a questionnaire regarding vocational plans used by the Ohio Department of Education, to make it more useful for career guidance. As might be expected given this background, the OVIS II and accompanying materials have a focus on career guidance and a number of features useful for a school system. The manual states that OVIS II is a "tool for helping students: gain a greater understanding of themselves, develop an awareness of careers, explore educational and occupational alternatives, plan and make decisions about their future careers" (Winefordner, 1983, p. 1).

The OVIS II is closely linked to the *Dictionary of Occupational Titles* (DOT) (U.S. Department of Labor, 1977) and the *Guide for Occupational Exploration* (GOE) (U.S. Department of Labor, 1979), and is based on a cubistic theory of vocational interests. The structure and logic of the OVIS II incorporate the theoretical view that occupational activities, and the interests and skills necessary to engage in particular occupations, can be described by their level of involvement with the three dimensions of data, people, and things. Consequently, the OVIS II teaches a way of thinking about the world of work that exemplifies this view.

The DOT was the starting point for construction of the inventory, and users are directed to the DOT and GOE for exploration of occupations and occupational areas. The 253 items of the OVIS II are organized into 23 occupational clusters, with 11 items per cluster. The clusters were developed by grouping occupations according to their involvement with data, people, and things. The items are activities performed in occupations within the cluster. For example, "Identify hearing problems and plan treatment" and "Perform corrective surgery on broken bones" are items within the Medical cluster. The report forms and materials introduce information provided by the GOE. Data describing seven dimensions of work characteristics were obtained from the Department of Labor and are the basis for the *Work Characteristic Analysis* section of the report form and the *Handbook for Exploring Careers*.

USE IN COUNSELING

The primary purpose of the OVIS II is "to help students understand their interests and relate them to the world of work" (Winefordner, 1983, p. 85). The report form and accompanying materials appear well suited for this purpose. The results of taking the OVIS II are clearly described, with a visual profile of interests, information about the consistency of responses, and normative information. The scoring procedure is transparent, even on the machine-scored form, so it is easy to understand how the results relate to the individual's responses.

The report form also exposes the student to a number of issues and factors that can be used to think about and organize the world of work and occupational interests. The *Work Characteristics Analysis* on the machine-scored form provides feedback about seven work-related factors associated with activities the respondent reported liking. The factors are: data, people, things levels; vocational preparation; aptitudes; work preferences; work environment; physical demands; and work settings. This information points out the link between the respondent's liking of specific work activities and factors important to career decision-making and satisfaction. Although the labels used are not always clear, important areas are covered such as abilities (aptitudes), interests in types of occupational activities (work preferences), and work values (work environments).

The manual provides useful information and detailed examples for interpretation of test results. Additional career guidance materials expand the OVIS II into a useful career guidance system; for example, filmstrips, the *Handbook for Career Exploration*, and the *Career Planner. Preview for Parents, Interpreting your Student Report*, and *Parent Guide to Understanding OVIS II Results* provide brief introductory information and a simple interpretive guide for the individual taking the inventory and for parents. Group reports available for school counselors, teachers, or administrators provide information suitable for designing specific career development activities to follow up on OVIS II results. Computer software is available for administration and scoring of the OVIS II.

TECHNICAL CONSIDERATIONS

Efforts were made during scale development to reduce sex differences by using items which did not differ for males and females, or balancing items which showed sex differencs. The report form gives percentile ranks based on both male and female norms. Both sex and ethnic differences exist on the scales, but means broken down by sex and grade, and by sex and ethnic affiliation are provided in the manual.

Test-retest reliability for the OVIS II scales over a four-week period is adequate, with median coefficients ranging from .76 to .82 for male and female samples in grades 8 and 10. There is evidence for scale homogeneity, with median internal consistency coefficients between .88 and .90 for grade 7–12 and college samples. The OVIS II was carefully developed, and scale intercorrelations support the construct validity of the instrument.

The content validity, or how well the items cover the world of work, is based largely on methods of item selection and the conceptual relationship with the DOT and GOE Work Groups. Eighty percent of teachers and counselors evaluating the research edition of the OVIS II believed that the items provided reasonable coverage of work activities.

Validity information reported for the OVIS II concerns the content and construct validity of the scales. Studies supporting the construct validity of the first edition are cited, but it is unclear how they would apply to OVIS II, because only about one-quarter of the items are the same. No validity studies using OVIS II are reported.

COMPUTER-BASED VERSION

The OVIS II Microcomputer Version (OVIS II/MICRO) package for use with Apple II, Apple II plus, and Apple IIe microcomputers provides for an on-site scoring service, with immediate scoring and reporting for up to 35 examinees. The package includes a Survey diskette, Analysis diskette, Reporting diskette, and Utility diskette.

A *Student Information Booklet* is also provided to examinees in order to show them how to use the OVIS II/MICRO program on the Apple microcomputer. The Booklet explains what the examinees will actually see on the microcomputer screen and provides step-by-step instructions on how to respond to the OVIS II Interest Inventory, using the keyboard. The Booklet also includes detailed information designed to help examinees interpret the results of the Inventory. Overall, the Student Information Booklet is brief, easy to read, and the instructions for using the microcomputer are easy to follow even for those examinees who are not experienced with microcomputers.

The OVIS II/MICRO also includes an *Administrator's Manual*. The Manual, written for counselors, provides an introduction to OVIS II and OVIS II/MICRO, an overview of OVIS II/MICRO, suggestions for administering the Interest Inventory, and detailed information concerning the scoring and reporting of the Inventory. However, the Manual does not include any technical information.

The OVIS II/MICRO has been designed specifically to allow students to take OVIS II in an "independent study" kind of an atmosphere. Since it contains the complete Inventory, like the paper-and-pencil version, it is untimed. However, most examinees will need approximately 30 minutes to complete the Inventory. As a result, whether or not a counselor chooses to use the OVIS II/MICRO instead of the paper-and-pencil vesion will depend upon the number of examinees who will be taking the Interest Inventory and the number of microcomputers available for the examinees to use.

OVERALL CRITIQUE

The OVIS II appears well suited to the tasks of self and occupational exploration described by Super (1963) and Jordaan (1963) as important for career development during adolescence. The materials convey a useful message regarding the career development process. Namely, that it is a process, and that involvement and exploration by the adolescent are central to that process. In contrast, because of its focus, the utility of the OVIS II for students in college or adults seems less obvious, although norms are available for college students and there are provisions for adapting materials for these populations.

The greatest weakness is the lack of empirical evidence supporting the usefulness of the OVIS II, despite its apparent utility. Although the manual notes that predictive validity may not be consistent with the purpose of the OVIS II, other types of information would be applicable. The concept of "exploration validity," defined by Tittle (1978) as an instrument's ability to increase the diversity of options explored, or the number of career exploration activities engaged in by an individual, appears particularly suited to the goals of this system. Investigations of whether the OVIS II influences both self-definition and occupational information would address the goals of the OVIS II. Admittedly, few test manuals for career instruments provide information of this type unless applied research is available. Unfortunately, little applied research using the OVIS II has appeared to answer these questions.

In summary, the OVIS II is likely to be particularly useful with students in grades 7 through 12 because of the goals of the instrument and the focus of materials. It is a carefully constructed instrument that draws on the substantial efforts put into the DOT and GOE by the U.S. Department of Labor. Interpretive materials are clear, and appear to have utility for encouraging the exploration of careers, although evidence of that usefulness is lacking.

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Self-Directed Search (SDS)

John L. Holland

Psychological Assessment Resources, Inc.
P.O. Box 998
Odessa, FL 33556

Target Population: Form E-Junior High School & Adults with limited reading skills; Form R-High School, College, Adult; Form CP-College, Adult.

Statement of the Purpose of the Instrument: A simple-to-use, self-administered test to help students, clients, or employees find the occupations that best suit their interests and abilities.

Titles of Subtests, Scales, Scores Provided: Scores on each of the six components in Holland's RIASEC theory; Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. Top three raw scores determine respondent's Holland code.

Forms and Levels Available, with Dates of Publication/Revision of Each: Form E—1990; Form R—1994; Form CP—1991.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: Manual—1985; Manual Supplement—1987.

Languages in Which Available: Form E—English, Spanish; Form R—English, Canadian, French, Spanish (1/94), Vietnamese; Form CP—English only, Form R—Braille edition.

Time: Actual Test Time: Approximately 30 minutes, but varies, as it is completely self-administered.

Total Administration Time: Approximately 30 minutes, but varies.

Norm Group(s) on Which Scores Are Based: Uses an individualized approach to interpretation; however, norms are available for high school and college males and females, and adults (males and females).

Manner in Which Results Are Reported for Individuals

Types of Scores: Raw scores; Percentile ranks available in manual.

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service

Cost of basic service per counselee: Form R—$7.80 per counselor, Form CP—$9.90 per counselor with discounts available at higher quantities.

Time required for scoring and returning: 24 hours.

Hand-Scoring

Scored by: clerk; counselor.

Time required for scoring: 5 minutes.

Local Machine Scoring: Not available.

Computer Software Options Available: Computer Version, Interpretive Report (Forms R and CP).

Ways in which computer version differs: CV—Administers, scores, and interprets. IR—Interprets only; unlimited-use program.

Cost of Materials

Specimen Set: Specimen Sets for each form are available at $6.95 plus a $3.50 handling & shipping charge.

Counselor Materials: SDS Form E Professional Kit—$85.00 (includes professional manual, manual supplement, user's guide, 25 Form E Assessment Booklets, 25 Jobs Finders, and 25 You and Your Job booklets). SDS Manual and Form E Professional User's Guide—$20.00. SDS Manual Supplement and Professional User's Guide is $15.00.

Counselee Materials: SDS Form E Assessment Booklets (25)—$25.00; Form E Jobs Finders (25)—$25.00; Form E You and Your Job booklets (25)—$17.00.

Counselor Materials: SDS Form R Professional Kit—$85.00 (includes professional manual, manual supplement, 25 Form R Assessment Booklets, 25 Occupations Finders, and 25 You and Your Career booklets). SDS Professional Manual alone—$20.00. SDS Manual Supplement alone—$15.00.

Counselee Materials: SDS Form R Assessment Booklets (25)—$25.00; Form R Occupations Finders (25)—$25.00; Form F You and Your Career Booklets (25)—$17.00.

Counselor Materials: SDS Form CP Professional Kit—$105.00 (includes professional manual, manual supplement, user's guide, 25 Form CP Assessment Booklets, 25 Career Options Finders, and 25 Exploring Career Options booklets). SDS Professional Manual and Form CP Professional User's Guide—$34.00.

Counselee Materials: SDS Form CP Assessment Booklets (25)—$34.00; Form CP Career Options Finders (25)—$32.00; Form CP Exploring Career Options booklets (25)—$32.00.

Additional Comments of Interest to Users: Other SDS resources available include College Majors Finder, Leisure Activities Finder, Dictionary of Holland Occupational Codes, etc. Form R and Form E are available in Canadian edition. The SDS Career Explorer (for junior high and middle school students will be available in early 1994).

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Reviewed By

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DESCRIPTION

The Self-Directed Search (SDS) is a self-administered, self-scored and self-interpreted vocational counseling inventory that can be used to identify an individual's occupationally related interests. Holland's purpose in developing the SDS was to provide a counseling tool that could be used to serve a large portion of the adolescent and adult population who seek career counseling. He intended the SDS to be used by individuals (and their counselors) as a structural framework for organizing personal and occupational information, to aid in making satisfactory and satisfying occupational choices. A parallel intention was to provide researchers with a psychometrically sound instrument that could be used to investigate the validity of the theory on which the SDS is based. In the judgment of this reviewer, Holland has achieved these purposes.

Holland's theory of vocational choice provides the conceptual basis of the SDS. Alternately referred to as a variation of "trait-factor" or "person-environment fit" theory, Holland's theory is based on a set of seven assumptions. Two assumptions point to the existence of distinct personality types and work environments, the five remaining assumptions focus on the interaction between individuals and environments that contribute to vocational choice and satisfaction. Specifically, the theory assumes the existence of six distinct work environments that differ in terms of the work requirements and job demands that are placed upon the people who work in them. These work environments are as follows: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Similarly, individuals display personality characteristics that may be used to place them into basic personality types.

In terms of person-environment interaction, the theory assumes that individuals will seek out work environments in which they will have the greatest opportunity to express their attitudes and values. Additionally, behavior is influenced by the interaction of personality attributes and the environment. Finally, it is important to recognize that although the six work environments and personality types are helpful theoretical constructs, their singular existence in the real world is unusual. Holland's theory accommodates this reality by focusing attention on individuals' three primary occupational types using their three-letter Holland occupational code.

As with previous versions, the SDS consists of an assessment booklet and an *Occupations Finder* (OF). The assessment booklet consists of five scales: Occupational Daydreams (up to eight self-identified occupations can be listed), Activities (11 items for each of the six personality types), Competencies (11 items for each of the six personality types), Occupations (14 items for each of the six personality types) and Self-Estimates (two items for each of the six work environments). Except for Occupational Daydreams, all of the scales are used to calculate the total score for each of the six personality types (each total score equals the sum of the raw scores). The ordinal relationship of the magnitude of the three highest total scores determines the three-letter Holland code. (It is recommended that the Occupational Daydreams section be used as a cross-validation of the obtained occupational code.) Once obtained, the summary code represents a simple way of organizing information about occupations. Users are directed to search the OF for every possible ordering of their three-letter code. Form E (EASY) of the SDS, which contains the same sections, but with fewer items per section and different labels for each section, is available along with a separate *Job Finder* (JF) for use with individuals with limited reading skills. Form CP and a separate *Career Option Finder* (COF) are available for professionals involved in long-term career planning.

USE IN COUNSELING

The SDS represents a popular means for conducting a search for the proper person-environment match. It is widely used by practitioners throughout the Unites States and in an increasing number of foreign countries as the vocational instrument of choice for adolescent and adult populations (e.g. see Khan & Alvi, 1991). The broad popularity of the SDS among practitioners may be linked to its basis in pragmatic knowledge. According to Polkinghorne (1992), "the test for pragmatic knowledge is whether it functions successfully in guiding human action to fulfill intended purposes" (p. 151). Any review of the recent literature pertaining to the use of the SDS with adolescent and adult clients will clearly demonstrate that it does guide human action to fulfill intended purposes. While some may challenge Holland's perspectives on personality and work environments as being too simplistic, and others may question the validity of the theoretical model itself, it would be very difficult to argue that completing the SDS does not provide valuable assistance to those who are seeking to make career decisions.

Said differently, Holland's theory may not provide a picture that corresponds perfectly to the complex reality of making an occupational choice; however, for many who act on the knowledge claims of the theory, it does produce results. The fact that the theory does produce results (is understood) by clients makes the SDS one of the preferred instruments of use among practitioners.

Its pragmatic value notwithstanding, the SDS and its underlying typology have been the focus of frequent evaluation and criticisms. Specific concerns have focused on the simplicity of Holland's personality typology, the problems associated with self-scoring and self-interpretation, the unavailability of appropriate and adequate statistical procedures for utilizing essential psychological constructs (e.g., differentiation and consistency) when interpreting or comparing results, and the lack of adequate support materials to guide users' career information-seeking behavior. The *Manual Supplement* (Holland, 1987) and the guidance booklet *You and Your Career* (1991) have addressed some of these concerns.

TECHNICAL CONSIDERATIONS

The 1985 SDS *Professional Manual* is as impressive as its predecessor. It contains a total of 69 tables (37 in the text and 32 in the appendices), four figures, and 35 SDS profiles. The chapter on the interpretation and use of the SDS is most informative. Questions concerning score consistency and score differentiation as well as other problems related to scoring and interpreting the SDS are addressed through the interpretation of 35 profiles. One entire appendix is devoted to normative data (i.e., percentile ranks, mean scores, frequency of code combinations, and distribution of people and jobs). Another appendix contains an eight-page alphabetical listing of occupational classifications and codes. Two appendices emphasize scoring accuracy, and one contains technical information for the 1985 revision. The reference section has been updated, but otherwise is almost identical to the one in the 1977 Revision.

Estimates of the internal consistency of the 1985 SDS are slightly higher overall than those reported for the 1977 version. For the Summary Scales, 69% had higher alphas, 17% showed no change, and 14% had lower alphas. The range of summary-scale alphas varied by age and gender. For ages 14–18, estimates for females ranged form .81 (Realistic) to .91 (Investigative), while males ranged from .81 (Social) to .92 (Realistic). For ages 19–25, alphas ranged from .87 (Social) to .92 (Artistic and Enterprising) for females, and from .83 (Social) to .92 (Artistic) for males. Estimates for females in the 26–74 age range varied between .85 (Artistic and Social) to .91 (Realistic, Enterprising, and Conventional), and between .87 (Artistic) to .93 (Investigative and Realistic) for males. Moderately high estimates of the temporal stability of the SDS are also reported in the *Professional Manual* for scales and codes, but these were based on data from the 1977 edition.

The concurrent validity of the 1985 SDS, which was determined by assessing the "percentage of hits" (i.e., the percentage of a sample whose high-point code and occupational code agree), is satisfactory. Additional concurrent and predictive validity studies are provided in the *Manual Supplement* (Holland, 1987). In addition to studies reported in the SDS manuals, the literature contains numerous studies that report on some aspect of the technical adequacy of the SDS with particular groups (e.g., Henry, Bardo, & Bryson, 1988; Khan, & Alvi, 1991; Miller, Springer, & Wells, 1988; Sheffey, Bingham, & Walsh, 1986; Walsh, Woods, & Ward, 1986).

Two problems remain as areas of special concern for this author. The first is the use of raw score data to determine the total score for each Holland code and, subsequently, the three-letter occupational code. Holland has provided a detailed rationale for his use of raw scores. Yet, many of his arguments fail to provide a satisfactory explanation of the practice, especially in light of the construction of the instrument. Holland describes the SDS as having four sections (totaling 228 items) that are used to determine the summary codes. However, because the scales do not contain an identical number of items, they contribute unequally to the total score of the summary codes.

The second concern is Holland's inconsistent use of his typology in the different sections. In three of the sections (Activities, Competencies, and Occupations), the typology serves as a framework for listing items (each item of each scale in each section has an assigned value of one). In the Self-Estimates section, however, the types become items, and the items may have an assigned value ranging from 1–7. Such a practice maximizes the weighted value of the very thing (occupational type) that is being determined.

COMPUTER-BASED VERSION

A computer version of the SDS is available for Form R (Apple and IBM Compatible) and Form CP (IBM Compatible only). Both versions display step-by-step instructions on the screen and utilize keyboard input. When completed, the program calculates RIASEC scores and Holland code. The computer searches a large data base for compatible occupations and generates a 10-to-20 page personalized report (depending on version used) which can be edited using four common word processing formats. A two- to-three page professional summary, which provides additional interpretive information, is also available.

Reardon and Loughead (1988) conducted a study comparing the computer and paper-and-pencil versions of Form R. Subjects were 62 undergraduate college students representing 18 majors. All students took both versions 7–10 days apart in a counterbalanced design. Results yielded correlations between summary scale scores ranging between .86 and .94. The mean differences in scores was less than 1.0 for all scales. Additionally, a 92-item satisfaction survey showed that the computer version was more highly rated on all but two items. Total administrative time also favored the computer version (approximately 25% faster).

The finding of reduced administration time is similar to what has been reported in other recent studies with the SII and CDM (see SII and CDM reviews) and is an attractive benefit. The finding of equivalence is also reassuring; however, additional studies should be undertaken to establish independently both the reliability and validity of the computer version with a variety of samples.

OVERALL CRITIQUE

In sum, the 1985 version of the SDS reflects Holland's continuing commitment to provide vocational clients, counselors, and researchers with an accurate, inexpensive, and simple means for addressing questions that are related to occupational choice. Its popularity among practitioners and researchers alike is testimony to its perceived utility and effectiveness. The expanded OF and COF will enhance its use as a stimulus for vocational exploration. Despite its many positive features, however, it is important to remember that it may not be the instrument of choice for all clients, and that some clients will need to see a counselor after completing the SDS. Similarly, users need to remember that the SDS, like other vocational choice instruments, has limited predictive validity. This limitation notwithstanding, the SDS remains an excellent vocational counseling tool that can be used with most adolescents and adults.

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NOTE: Portions of this review were abridged from the author's original review in the *Tenth Mental Measurements Yearbook* with permission of the Buros Institute.

The Strong Interest Inventory (SII)

David P. Campbell, Edward K. Strong and
Jo-Ida C. Hansen

Consulting Psychologists Press
3803 East Bayshore Road
Palo Alto, CA 94303

Target Population: High school, college, and adults; items at 6th grade reading level.

Statement of the Purpose of the Instrument: Intended to measure the interests of an individual in occupations and preferred work environments, used as an aid in making educational and occupational choices, in helping people understand their job dissatisfaction, in life style exploration and in retirement counseling.

Titles of Subtests, Scales, Scores Provided: 6 occupational themes, 23 basic interest scales, 207 occupational scales, 2 special scales, and 26 administrative indexes. Sections on the inventory are occupations, school subjects, activities, leisure activities, types of people, preference between activities, individual characteristics. Scores provided as standard scores.

Forms and Levels Available, with Dates of Publication/Revision of Each: Prepaid Profile T325 only. Revised 1985.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: Manual for the Strong Interest Inventory (1985). Users Guide (1992).

Languages in Which Available: Spanish, Hebrew, French Canadian, British, French, Australian, available commercially. Research translations have been made in others.

Time: Actual Test Time: 25—35 minutes.
Total Administration Time: 25—35 minutes.

Norm Group(s) on Which Scores Are Based: N 600 1/2 male 1/2 female 1985 in prof-nonprof and tech occupations high school to Ph.D. Had to be successful, satisfied, perform in typical manner, and on job at least 3 years, and between 25—60 years old.

Manner in Which Results Are Reported for Individuals

Types of Scores: Standard T-scores. Admin. Indexes in %.

Report Format/Content

Basic Service: 2 page profile (2 copies) computer score only explanation of scores on the reverse side.

Options: Interpretive Report, Individual Summary, Expanded Interpretive, Leisure Report, Organizational Specialty, Leadership Management Style, College Major Report, Professional Report.

Report Format/Content for Group Summaries

Basic Service: Group Summaries available upon special request through Research and Information Services. Summary Statistics (mean and SD) and data files on IBM PC floppy available.

Scoring

Machine Scoring Service

Cost of basic service per counselee: Profile Report $8.00.

Time required for scoring and returning: 24 hours plus mail time.

Hand-Scoring: Not available.

Local Machine Scoring:

Provisions/conditions/equipment required: Contact publisher for information.

Computer Software Options Available: Standard administration on-line. Key-in and scanning options. Interpretive Reports

Cost of Materials

Specimen Set: *Business Sampler*: Intro to Strong in Organizations, prepaid Expanded Interpretive Profile Sampler $15.00 including prepaid Answer Sheet and Test Booklet. *College Sampler*: Career Finder, and Career Exploration Worksheet and prepaid Expanded Interpretive Report prepaid Profile test booklet and answer sheet. (Contact publisher for current prices.)

Additional Comments of Interest to Users: Work on the next revision and expansion is currently under way with expected publication in August, 1994.

Published Reviews:

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DESCRIPTION

Although the Strong-Campbell Interest Inventory still exists today in substantially the same 1974 format, David Campbell is no longer connected with it. The inventory has been renamed the Strong Interest Inventory (SII). Since Borgen (1988) reviewed the Strong in the second edition of the *Counselor's Guide*, the only major revision has been the *User's Guide for the SII* (Hansen, 1992). The current version of the SII consists of the fourth edition of the *Manual for the SVIB-SCII* (Hansen & Campbell, 1985), the second edition of the *User's Guide for the SII* (Hansen, 1992), and the 1985 SVIB-SCII booklet.

The *User's Guide* provides interpretive guidelines for the 1985 revision "that are derived from research findings, clinical knowledge, theoretical possibilities, and occupational data" (Hansen, 1992). Several new research reports have been included, and new case studies were developed that illustrate new features and demonstrate interpretation techniques. The *User's Guide* also describes several publications that can help users interpret SII scores. With the exception of modifications of seven items related to religious activities, the 325 items in the 1985 inventory are identical to those in the 1974 and 1981 inventories.

The SII produces two kinds of homogeneous scales: six General Occupational Themes using Holland Codes and 23 Basic Interest Scales. In addition, there are empirically derived scales for 207 occupations, and 202 of these have both male and female scales. Four occupations are represented only by female scales (e.g., Dental Assistant), and one occupation has only a male scale (Agribusiness Manager). Approximately one-third of the profile occupations require less than a college degree.

The new Women-in-General (WIG) and Men-in-General (MIG) samples were drawn from 93 occupations, and for the first time, the subjects in each of the sample pools are matched on occupational title. In other words, if the MIG sample pool contained five bus drivers, so did the WIG sample pool.

USE IN COUNSELING

The SII is used primarily as an aid in making long-range choices about careers, occupational changes and educational pursuits. It is recommended for use "with anyone in need of help with career or lifestyle decisions" (Hansen, 1992, p. 1). Hansen suggests that users could range from students choosing college majors to adults making retirement plans.

Users of the SII should become familiar with several publications that might be helpful in interpreting inventory scores or generalizing beyond profile results. The *Strong-Hansen Occupational Guide* (Hansen, 1987) contains information on all SII occupational scales. A leader's guide, *Using the Strong in Organizations* (Hirsh, 1986) and a participant's guide, *Introduction to the Strong in Organizational Settings* (Hirsh & Vessey, 1987) are useful in organizational or group contexts.

Two workbooks offer a way for clients to record their high scores and occupational codes: The *Career Development Guide for Use with the Strong* (1987) and *Introduction to the Strong for Career Counselors* (1991). In addition, the *Strong Career Finder Exploration Worksheet* (1991), which helps clients organize a job search, and the *Strong Career Finder* (1991), which provides additional occupations, are highly recommended. Finally, familiarity with the *Manual* and the *User's Guide* is essential for the proper interpretation of the SII.

TECHNICAL CONSIDERATIONS

For the 1985 revision, 207 occupational samples containing 48,238 people (24,179 females and 24,059 males) were used to construct the Occupational Scales. Median test-retest correlations for these scales over 2-week, 30-day and 3-year periods were found to be .92, .89 and .87 respectively. In other words, the reliability of the SII appears to be adequate.

Concurrent validity was examined by determining the contrast between occupational criterion samples and the People-in-General reference samples. The median overlap for all Occupational Scales is 36 percent, meaning they are separated by about two standard deviations, indicating that concurrent validity is also adequate.

The SII has a long history of predictive validity research in which scores on the SII are compared with the occupation actually entered. Although the research conditions vary, the *User's Guide* reports that ". . . generally between one-fourth and one-half of the participants are found to have entered occupations that were predictable from their earlier SII scores." At least one study has found the SII to be valid for predicting college majors (Hansen & Swanson, 1983).

Several issues have been raised by reviewers over the years. Tzeng's review (1985) represents an in-depth analytical discussion of some relevant technical issues. In a recent thought-provoking review, McArthur (1992) presents some "rumblings of a distant drum" (p. 517). Among McArthur's concerns is the fact that the use of separate test booklets for men and women was backed by years of research; the use of the combined booklet, he says, leaves some questions of validity to be answered. McArthur also expresses concern over a shift in the types of occupations included, a shift he indicates is taking place at the expense of the SII's usefulness for high-level, white-collar occupations.

Specific concerns about the SII include the fact that scale content and weightings are not available. The *Manual* points out possible interpretive difficulties with inconsistent scores; knowing which items comprised a particular scale could aid in resolving such difficulties.

Scale content is also important in interpretation of the gender-specific results. Men and women take the same inventory, but their results are determined based on separate scales, the content of which is not known. The *Manual* provides an extensive discussion of the reasons behind separate scales. Perhaps discussion of differences in scale content could strengthen the authors' case.

Further content issues arise from what Crites (1978) describes as the "dust-bowl empiricism" approach taken by the Strong. Items are included in the inventory because they "work," but why they are effective is not known. In some instances, face validity of specific SII items can appear questionable.

A final, and minor, concern is that perhaps the *User's Guide* goes overboard in offering suggestions for interpretation. It states, for example, that Social people are "likely to show little interest in the details of their SII profile." Such blanket statements may be going too far for an inventory that is very explicit about the fact that it merely matches and categorizes likes and dislikes.

COMPUTER-BASED VERSION

Software can be obtained to allow the SII to be administered, scored and interpreted through the test administrator's computer. Software is also available for scoring purposes only.

Studies have been conducted by Vansickle, Kimmel, and Kapes (1989) and Vansickle and Kapes (1993) to evaluate the equivalence of the paper and pencil versus computer-based versions. Both studies have produced evidence that the computer-based version is more reliable than the paper-and-pencil version both in terms of test-retest coefficients and hit rates using Holland codes. Furthermore, the computer-based version took significantly less time to complete (e.g., 22 vs. 31 minutes). When differences between the two versions were examined in terms of scale means and standard deviation, fewer differences were discovered than would have been expected by chance.

For those who have a computer available and generally administer the SII on an individual basis, the computer-based version may be preferred. It could save both time for administration and turnaround time for scoring while providing more reliable information.

OVERALL CRITIQUE

The SII is clearly impressive, and some believe that it is probably the best interest inventory available at this time. It has a long history of careful research and development, and its authors have consistently seemed willing to accept criticism and work toward improvement. However, there is no such thing as a perfect test. For the practitioner, Jepsen's (1991) evaluation of the SII provides a thoughtful perspective, because it describes the characteristics of the client with whom the inventory may be most effective:

> A serious recommendation to use the SII is usually conditional. For example, it seems wiser to use the SII with clients who (a) are academically prepared for higher education, (b) have few emotional problems, (c) have a broad range of experiences on which to base their answers, (d) are decisive about their feelings, (e) are neither habitual "nay" or "yea" sayers, and (f) are willing to accept general, as against specific,

> predictions about entering "matching" occupations and to interpret the occupational structure in a broad sense. If clients' expectations do not fit these conditions, then there are unspecified risks associated with achieving the purposes of the SII. . . . But, when the conditions are appropriate, the SII is easily the best inventory available. (Jepsen, 1991, p. 10)

Both researchers and practitioners should examine David Campbell's new interest inventory, the Campbell Interest and Skill Survey. Building on the knowledge and experience gained from work with the Strong-Campbell Interest Survey, Campbell has extended the standardized inventory approach to the domain of self-reported skills as well as self-reported interests. Whether there will be other rumblings of a distant drum remains to be heard.

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CHAPTER VIII

Values and Satisfaction Measures

Minnesota Importance Questionnaire (MIQ)

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Target Population: Adults and high school students, ages 16 and above, of both sexes. Reading level is approximately grade 5.

Statement of the Purpose of the Instrument: The MIQ is designed to measure 20 (or 21) psychological needs (and their six underlying values) found relevant to work satisfaction. The MIQ permits comparison of individual needs with measured reinforcers or benchmark occupations representative of the major fields and levels of the work world. Need-reinforcer correspondence allows the prediction of job satisfaction.

Titles of Subtests, Scales, Scores Provided: Needs: Ability Utilization, Achievement, Activity, Advancement, Authority, Company Policies and Practices, Compensation, Co-workers, Creativity, Independence, Moral Values, Recognition, Responsibility, Security, Social Service, Social Status, Supervision-Human Relations, Supervision-Technical, Variety, Working Conditions (and Autonomy in Ranked form). **Values**: Achievement, Altruism, Autonomy, Comfort, Safety, Status. **Validity**: Logically Consistent Triads.

Forms and Levels Available, with Dates of Publication/Revision of Each: 1975; Spanish edition also available; Ranked form (1975).

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: User's manual was published in 1981; Counseling use of the MIQ (1975); Manual for the Minnesota Importance Questionnaire (1971).

Languages in Which Available: Paired form available in Spanish and English; Ranked form available only in English.

Time: Actual Test Time: Paired: 30–40 minutes; Ranked: 15–25 minutes.
Total Administration Time: Paired: 30–40 minutes; Ranked: 15–25 minutes.

Norm Group(s) on Which Scores Are Based: Occupational correspondence scores are based on occupational reinforcer ratings from employees and supervisors in 185 occupations representative of the world of work.

Manner in Which Results Are Reported for Individuals

Types of Scores: Need and value scores are intra-individual adjusted z-scores.

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Report Format/Content

Basic Service: Two-page computer profile. Page 1 represents need and value score graph. Page 2 reports individual's need correspondence with reinforcer patterns of 90 benchmark occupations.

Options: MIQ Extended Report is same format as standard report but provides report of individual's need correspondence with reinforcer patterns for 185 occupations (three-page report).

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service

Cost of basic service per counselee: $3.00. All costs subject to change without notice.

Cost of Options: Report plus duplicate copy: $3.15; Extended report: $3.25; Extended report plus duplicate copy: $3.45.

Time required for scoring and returning: (maximum) In-house turnaround is one work day.

Hand-Scoring: Not available.

Local Machine Scoring: Not available.

Computer Software Options Available: Not available. On-line administration and interpretation planned for 1994.

Cost of Materials

Specimen Set: $11.00.

Counselee Materials: Test booklets (reusable) $.70 each 10 to 99 copies; $.67 each 100 to 249; $.64 each 250 or more. Answer sheets (not reusable) $.12 each; MIQ manual: $8.50; *Occupational Reinforcer Patterns* $20.00 each.

Additional Comments of Interest to Users: The 1981 MIQ profile features the addition of 6 value scales, and the revised correspondence report includes additional occupations and an improved correspondence index. A 20 page Annotated Bibliography is available.

Published Reviews:

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Reviewed By

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DESCRIPTION

The Minnesota Importance Questionnaire (MIQ) is designed to assess vocational needs and values of individuals 16 years of age and older. The MIQ measures the importance of 20 psychological needs along with six underlying values associated with work environments.

Needs reflect values in that they are thought to affect choices of environments, and perceptions of and satisfaction with environmental conditions (Rounds, Henly, Dawis, Lofquist, & Weiss, 1981). For instance, a work environment that encourages accomplishment is one which is Achievement oriented. A work environment that is comfortable and non-stressful is one which is Comfort oriented. Environments which provide recognition and prestige are Status oriented. Altruistic environments foster harmony with and service to others. Safe environments are ones which are predictable and stable, and environments which stimulate Initiative foster autonomy. The MIQ is designed to indicate satisfaction in each of these work environments.

The MIQ is available in two self-administered forms that use one statement to represent each of the 20 needs. The paired form of the MIQ may be completed in 30–40 minutes while the ranked form only requires 15–20 minutes. The test can be administered individually or in groups. The manual (Rounds et al., 1981) states that the MIQ requires only a minimum of supervision. Respondents must provide an answer for every item, "even if he must guess" (Gay, Weiss, Hendel, Dawis, & Lofquist, 1971, p.3). In the ranked form, statements are grouped in 21 sets of five. Thinking about their "ideal job," respondents rank the five statements in order of importance. In the paired form, a statement is paired once with every other statement, creating 190 paired comparisons. Each respondent decides respondents decides which statement in the pair is more important in an "ideal" job. Needs are then determined by the number of times an individual selects a statement as important in relation to others. Values are defined by a cluster of related needs.

USE IN COUNSELING

According to the manual (Rounds et al., 1981), the MIQ can be used in vocational counseling, career planning, and job placement. By utilizing the MIQ, counselors can help individuals identify the importance of psychological needs and relate this to expectations of work settings. For career planning, the MIQ profile can be compared with Occupational Reinforcer Patterns (ORPs) to provide a systematic way to identify those occupations that are most likely to be satisfying for the person. In order to maximize productivity and minimize turnover, absences, and tardiness, the authors claim that employers can use the MIQ for job placement.

High scale values on the MIQ may be viewed as signifying a preference for the specific reinforcer represented by the scale or as indicating a preference for a more general reinforcer for which the scale is one of several indicators (Gay et al., 1971). By examining the pattern of high scale scores, counselors may be able to discern which of the six values is more preferred by the respondent. The authors caution that the scale scores must be interpreted with the specific content of the item representing a given scale. The MIQ scores may also be interpreted in terms of the likelihood of satisfaction in a specific occupation. Predicted satisfaction (*S*atisfied, *L*ikely Satisfied, and *N*ot Satisfied) is limited to those occupations for which ORPs have been established. By examining the *Minnesota Occupational Classification System II*, the user is provided with information on a much larger number of occupations classified according to their reinforcer patterns.

TECHNICAL CONSIDERATIONS

The MIQ does not use norm groups; rather, each individual's profile is determined by his/her responses to the questions. Since the intention is to use the individual as the frame of reference, the MIQ employs ipsative scoring. Using this approach, two people with identical scores may differ dramatically in the strength of their needs.

Scoring of the MIQ results in adjusted scale scores for the 20 vocational needs scales, and a Total Circular Triad (TCT) score (paired form only). Additionally, error bands are calculated around the individual adjusted scale scores. These adjusted scale scores range from −4.0 to +4.0, with a maximum range for the individual being half this total range. Values greater than 0 indicate needs which are important to the person and values below 0 are needs which are less important. All scale values are adjusted for the individual in that they are computed in such a way that the zero point indicates the same subjective point for all individuals (Gay, et al., 1971).

One internal check built into the instrument (paired form only) is the TCT score which indicates the consistency of responding to the MIQ items. The TCT scores range from zero to 385. Scores of 255 or higher represent invalid responses to the MIQ. Error bands indicate the range of indecision on each vocational need dimension and are computed for each adjusted scale value. The MIQ scoring service will also report the degree of correspondence between a respondent's profile and the ORPs for a specific occupation. Low scores indicate correspondence while high scores indicate weak relationships.

Scale internal consistency was investigated using nine groups of subjects, most of which were college students. Other than indicating that all groups included both males and females, no demographic information is discussed in the manual. Reliability coefficients ranged from .30 to .95, most were between .77 and .81. The internal consistency for each scale is not reported. Studies using nine test-retest intervals, from immediate to 10 months, were conducted. The median range for these intervals was .89 (immediate) to .49 (nine months). Approaching one year, the MIQ scores were relatively stable. Benson (1988) noted that these median reliabilities do not establish the reliability of individual scale scores. The profile reliability coefficients range from .70 to .95 which indicates that the profile of scores may be more reliable than individual scale scores.

Evidence of content validity is not available from the MIQ manual. No information is given concerning the method of selection or the qualifications of the people involved in selecting the initial items. The authors argue that the MIQ results in information about personal values; yet, some would argue that the test actually measures needs and not values (Herr & Cramer, 1988). Although the MIQ may indicate need preferences, counselors should be cautioned about interpreting the results as an indication of personal values.

Construct validity focuses on correlations with other tests. Although the authors attempt to establish discriminate validity by reporting low test intercorrelations with the General Aptitude Test Battery (GATB) and high correlations with the Strong Vocational Interest Blank (SVIB), "the GATB also contains performance tests in addition to paper-and-pencil tests, so variations in method of measure may contribute to the disparity in shared variance" (Lachar, 1992, p. 543). Using information from 5,358 people, intercorrelations were reported from .05 to .77 with a mean of .33. This indicates that the scales are relatively independent. Paired scale intercorrelations were not discussed.

Criterion related validity does not focus on the predictive capability of the MIQ. Instead, the authors provide evidence that the MIQ correlates with other test instruments. Additionally, the authors attempt to use the method of contrasted groups to provide validity evidence; yet, only three occupations were represented (vocational rehabilitation counselors, retail trade work, and school counselors). In addition, a variety of demographic characteristics (e.g., age, sex, education) were related to scores on the MIQ. The authors claim that there are differences where differences were expected; however, this is not supported.

OVERALL CRITIQUE

The MIQ may be a helpful tool in career counseling settings because it provides a profile of the person's needs and work reinforcer patterns. However, there is no evidence to support the author's claim that the MIQ provides a profile of the persons' values. Essentially, the MIQ provides a profile of needs relative to their "ideal job." Because demographic characteristics of the subjects were not discussed, there is no assurance that the instrument is free from bias.

The manual does not present information on the effectiveness of using the MIQ for job placement. Therefore, use of the MIQ for job placement purposes cannot be recommended until additional information relating to placement is provided. Perhaps the MIQ could be used for within-group scoring by employers. This would allow individuals to be compared to their cultural or ethnic peers.

Although the MIQ has weaknesses, it can be used in career planning settings. It is a helpful instrument which provides a person with a list of needs and reinforcers which relate to work satisfaction.

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Minnesota Satisfaction Questionnaire (MSQ)

David J. Weiss, René V. Dawis,
George W. England and Lloyd H. Lofquist

Vocational Psychology Research
N620 Elliott Hall, University of Minnesota
75 East River Road
Minneapolis, MN 55455-0344

Target Population: Employed workers, all ages.

Statement of the Purpose of the Instrument: The Minnesota Satisfaction Questionnaire is designed to measure an employee's satisfaction with his or her job. The MSQ provides more specific information on the aspects of a job that an individual finds rewarding than do more general measures of job satisfaction. The MSQ is useful in exploring client vocational needs, in counseling follow-up studies, and in generating information about the reinforcers in jobs.

Titles of Subtests, Scales, Scores Provided: Long-Form—Measures job satisfaction on 20 five-item scales: Ability Utilization, Achievement, Activity, Advancement, Authority, Company Policies, Compensation, Co-workers, Creativity, Independence, Moral Values, Recognition, Responsibility, Security, Social Service, Social Status, Supervision—Human Relations, Supervision—Technical, Variety, Working Conditions. Additionally, a 20-item General Satisfaction scale is also scored. Short-Form—This form consists of 20 items from the long-form MSQ that best represent each of the 20 scales. Factor analysis of the 20 items resulted in two factors—Intrinsic and Extrinsic Satisfaction. Scores on these two factors plus a General Satisfaction score may be obtained.

Forms and Levels Available, with Dates of Publication/Revision of Each: Long-Form; Short-Form.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1967.

Languages in Which Available: English.

Time: Actual Test Time: 15–20 minutes (long-form); 5–10 minutes (short-form).
Total Administration Time: 15–20 minutes (long-form); 5–10 minutes (short-form).

Norm Group(s) on Which Scores Are Based: Various norm groups of employees are reported in the manual and in numerous research studies.

Manner in Which Results Are Reported for Individuals

Types of Scores: Raw scores by individual only.

Report Format/Content for Group Summaries

Basic Service: Means, standard deviations, reliabilities, and standard errors of measurement for each scale; item means and *SDs* for each item.

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Scoring

Machine Scoring Service

Cost of basic service per counselee: (Subject to change without notice). Long-Form: $1.50 per booklet; $30 minimum. Short-Form: $1.00 per booklet; $20 minimum.

Time required for scoring and returning: 3–5 working days.

Hand-Scoring

Scored by: clerk.

Time required for scoring: 15 minutes (est.) per person.

Local Machine Scoring: Not available.

Computer Software Options Available: Not available.

Cost of Materials

Specimen Set: $6.00; does not include postage and handling.

Additional Comments of Interest to Users: New manual in preparation.

Published Reviews:

Bolton, B. (1986). Review of the Minnesota Satisfaction Questionnaire. In D. J. Keyser & R. C. Sweetland (Eds.), *Test critiques V*. Kansas City, MO: Test Corporation of America.

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Reviewed By

Donald G. Zytowski

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DESCRIPTION

The Minnesota Satisfaction Questionnaire (MSQ) is one of several instruments developed by the Work Adjustment Project at the University of Minnesota to validate their Theory of Work Adjustment (Dawis & Lofquist, 1984). In part, the theory asserts that job satisfaction is a result of the congruence between the worker's preferences or values, and the job's rewards (''needs'' and ''reinforcers'' in the stylized scientific language of the late 1950s, when it was first formulated). The Project created the Minnesota Importance Questionnaire (MIQ; reviewed elsewhere in this volume) to assess workers' preferences for 20 different rewards of work, such as Compensation, Working Conditions, opportunities for Creativity or Advancement, and the like. A parallel rating form, to be filled out by supervisors, assesses the rewards inherent in any given job. The Project further developed the MSQ to assess workers' levels of satisfaction with each of the 20 rewards for their current jobs. The manual describes the MSQ as useful in evaluating vocational rehabilitation outcomes, as ''one concrete quality outcome measure against which the effectiveness of counselors and/or counseling techniques can be evaluated." Average levels of general satisfaction scores could be calculated and compared for different counselors or counseling techniques, or possibly different classes of disabilities.

The MSQ (Long Form) consists of 20 scales. Each consists of five items describing an aspect of a job, such as "The feeling of accomplishment I get from the job" (keyed to Achievement). A five-level response is allowed, from "Very dissatisfied," (weighted 1) through "Neither," to "Very Satisfied," (weighted 5). The best items from each of the 20 scales are summed into a general satisfaction score. This set of items also constitutes the MSQ Short Form, which in turn yields two subscale scores, one that assesses satisfaction with "intrinsic" factors, such as Achievement and Ability Utilization, and one with "extrinsic" factors, such as Coworkers and Company Policies. There is no mention of the utility of these two factors.

The *Manual* is dated 1967, and a new edition is in preparation. Also available is a bibliography of approximately 300 entries dating from 1967 to 1989.

USE IN COUNSELING

Although designed to evaluate the outcomes of vocational rehabilitation, the MSQ should be similarly applicable to individuals who must find new jobs owing to "employer disabilities," like layoffs, and business failures.

A novel use of the MSQ, to promote client understanding of how their current jobs are or are not meeting their vocational needs, is advanced by Thompson and Blaine (1992). They suggest constructing a satisfaction × importance grid based on dividing MSQ and MIQ scores for each of the 20 variables into low, moderate, and high cells. In this way, clients can easily comprehend which of their important vocational needs are being satisfied, and which are not, and which satisfactions are of no consequence because they are not regarded as important, thus giving guidance for future career planning.

One could also imagine asking clients who are contemplating entering an occupation with which they have little experience to fill out their *anticipated* satisfactions using the MSQ, to check the reality of their perceptions against the extensive data available in the norms.

Counselors undoubtedly would like to use such a measure as the MSQ to help clients with the frequent presenting problem of deciding whether to quit a job or an occupation. This could be an inappropriate use because of individual differences in tolerances for unrewarding, or even punitive, work, or because other factors, such as family responsibilities or economic conditions militate against change.

TECHNICAL CONSIDERATIONS

All of the foregoing applications of the MSQ must rest on sound psychometric characteristics. A plethora of data is given in the manual, and much more, presently represented in the bibliography, awaits inclusion in the expected new manual.

The authors assert that the most meaningful scores to use in interpreting the MSQ are percentiles, derived from whichever norm group available in the manual corresponds most closely to the respondent's present job. This use of differing norms is justified on the basis of various findings that persons in the professions report higher job satisfaction, on the average, than those employed in the skilled trades. There are norms available for the Long Form MSQ for 25 occupational groups, from accountants to laborers, and two general employed groups, disabled and non-disabled. The Short Form has norms for seven groups, from engineers to assemblers. A percentile score of 75 or more is taken to reflect a high degree of satisfaction; 25 or lower, a low level of satisfaction.

Each of the 27 Long Form norm groups have been used to establish the internal consistency of the 21 (20 needs, plus general satisfaction) scales. They range from .97 to .59, with 83% of the coefficients over .80. (That single .59 coefficient represents a lesson in the value of replications. Had it been the only reliability assessment, the authors might have abandoned the scale.) The median test-retest correlation for the 20 need scales over a one-week interval was .83, and for a one-year interval .61.

Evidence of validity is furnished chiefly in terms of group differences, one of the long-standing preoccupations of the University of Minnesota Psychology Department. The 20 scales differed both in means and variances over the 25 norm groups, all at the .001 significance level. Moreover, the disabled were generally less satisfied than non-disabled.

Repeated analyses of the factor structure of the MSQ found differences among occupational groups, and that most yield intrinsic and extrinsic factors, each accounting for about half the common variance. Interestingly, these findings are in contrast to factor analyses of the MIQ, which tended to support a structure of six factors.

Scale intercorrelations reported (190 correlations for each of 14 samples) tend toward the overwhelming, but do reveal a disturbingly large number dangerously close to the range of the scale reliabilities. For instance the data for secretaries shows one correlation of .84, two in the .70s, 17 in the .60s, and 36 in the .50s. The raises the question: Is satisfaction more nearly global, rather than faceted into 20 variables?

Since the MSQ is integral to the Theory of Work Adjustment, evidence of its construct validity is crucial. A set of studies rather vaguely reported in the manual and inferred from analysis of the MIQ reported that three of the MSQ scales showed "good" evidence of validity and four showed "some" relationships to need-reinforcer correspondence. No evidence is presented to suggest that MSQ scores are related to the presumed outcomes of job satisfaction, such as job commitment or withdrawals. Neither are there any reports of congruent validity with other measures of job satisfaction.

An important question concerns whether the 20 scales of the MSQ cover the whole range and sample adequately from the universe of needs and reinforcers. Neither their sources nor the rationale for those selected is given in the manual. That so few of the 20 scales exhibited good construct validity casts a shadow on coverage afforded by the selected 20, as does a note in the manual that a form with 10 new scales had been developed and 23 new scales with special relevance to scientific personnel were under study. The 1977 revision of the MSQ test booklet revealed no modifications that might have resulted from these studies.

OVERALL CRITIQUE

Despite the well-conceived theory supporting the development of the MSQ, this reviewer is compelled to conclude with the too-frequent caution that it may be limited in its utility. This conclusion rests chiefly on the facts that although the 20 scales are highly reliable, they are not all that independent, and that while they reflect many group differences, evidence of their construct validity is vague. The use of the general satisfaction score as a criterion variable in outcome research may be warranted, and the cautious, exploratory use of the instrument as suggested by Thompson and Blaine (1992) may contribute to the insight and career planning of counseling clients.

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The Salience Inventory (SI)

Dorothy D. Nevill and Donald E. Super

Consulting Psychologists Press
3803 East Bayshore Road, PO Box 10096
Palo Alto, CA 94303

Target Population: Upper elementary or middle school level up through the adult years.

Statement of the Purpose of the Instrument: Developed by the Work Importance Study (WIS), an international consortium of vocational psychologists from Asia, Australia, Canada, U.S., Portugal, France, Italy, Yugoslavia, Israel, India, and Czechoslovakia. The objective was to assess the relative importance of the work role in the context of other life roles and to better understand the values that individuals seek or hope to find in various life roles.

Titles of Subtests, Scales, Scores Provided: Three parts which examine the importance of five career roles: 1) Studying, 2) Working, 3) Community Service, 4) Family, and 5) Leisure Activities. 3 scales: 1) Participation, 2) Commitment, and 3) Value Expectations. Each scale contains about five roles. Does not seek to assess role knowledge for occupations like the CDI and others do. Scores result from averaging the raw scores on each scale, then comparing to means and standard deviations of norm groups in the Appendix.

Forms and Levels Available, with Dates of Publication/Revision of Each: The present form published in 1985 is the only form.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: Research Edition 1986 Manual.

Languages in Which Available: English. Each national team was responsible for the development of its version.

Time: Actual Test Time: 30–45 minutes.
Total Administration Time: 15–20 minutes to score.

Norm Group(s) on Which Scores Are Based: High School, College & Adult Norms given in four of X & SD. 10th & 12th grade high school norms.

Manner in Which Results Are Reported for Individuals

Types of Scores: Average score of each scale/utilizes *X* & *SD* of Norm Groups in Appendix.

Report Format/Content

Basic Service: Basic profile format. No lengthy interpretive narrative available. A one-page profile reporting the 15 scale scores is the outcome for both hand and computer scoring.

Report Format/Content for Group Summaries

Options: Group Summaries are gathered upon special request through research & information services.

Scoring

Machine Scoring Service

Cost of basic service per counselee: Test Booklet (reusable), Report Form. 1993 prices subject to change 1/1/94.

Hand-Scoring

Scored by: counselee; clerk; counselor.

Time required for scoring: 15 minutes.

Local Machine Scoring: Not available.

Computer Software Options Available: Not available.

Cost of Materials

Specimen Set: Contact publisher for current prices.

Counselee Materials: Reusable test booklets (package of 25), $30.00. Answer Sheets (package of 25), $13.00. Report forms (package of 25), $12.00.

Additional Comments of Interest to Users: The author is interested in receiving data from all research with his instrument since this is a research edition. The inventory was developed out of the Work Importance Study, an international consortium of vocational psychologists organized by Donald E. Super, Ph.D.

Published Reviews:

Zytowski, D. E. (1988). Review of The Salience Inventory. In J. T. Kapes & M. M. Mastie (Eds.), *A counselors guide to career assessment instruments* (2nd ed.). Alexandria, VA: National Career Development Association.

Reviewed By

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DESCRIPTION

The Salience Inventory (Super & Nevill, 1985) is a product of the Work Importance Study (WIS), an international consortium of vocational psychologists who are working across cultures and time a) to assess the importance of the work role in the context of other life roles and b) to understand the values that individuals seek to satisfy through various life roles. The inventory provides information on the relative importance a person attaches to study, work, homemaking, leisure, and community service. This information is useful to counselors and clients in the effort to understand a person's readiness to make career decisions.

The Salience Inventory is linked to Super's career development theory and his concept of a Life-Career Rainbow (1980). The inventory identifies five major life roles—student, worker, homemaker (including spouse and parent), leisurite, and citizen—each of which is assessed by three scales—the Commitment Scale, the Participation Scale, and the Value Expectation Scale. Thus, each respondent receives scores on 15 scales, for example, a score that reflects commitment as a student, a score that reflects participation as a student, a score that reflects the value expectations of a student, and so on.

The Salience Inventory is composed of 170 items that can be administered in 30 to 45 minutes, and can be hand- or computer-scored. Instructions are provided in the *Manual* for hand scoring the instrument or for developing a template for in-house scoring.

The five Participation Scales are behavioral measures; the items ask the individual to describe the extent to which she or he has participated in the five life-career roles. The response choice for all items is a 4-point scale ranging from never (1) to always (4). The Participation Scales, however, do not measure how a person feels about a particular role or how much the person knows about it.

The five Commitment Scales were designed to measure attitudes towards roles by asking "how do you feel about" various aspects of the five life roles. For example, using the 4-point scale ranging from never (1) to always (4), the client is asked to indicate how important it is, or will be, to be good in: a) studying, b) working, c) community services, d) home and family, and e) leisure activities. The Commitment Scales are meant to measure an individual's identification with each of the roles and its activities.

The third set of scales assesses the attitude of individuals towards the five roles by determining the degree to which the respondent expects her or his values to be found in the five life roles. This section of items is called Values Expectations and asks the individual to indicate, from never (1) to always (4), the opportunity she or he expects to have to fulfill various intrinsic and extrinsic values (e.g., help people with problems, or be physically active) through the five life roles.

USE IN COUNSELING

According to Nevill and Super (1986), the Salience Inventory was developed specifically to help evaluate the importance, for an individual, of work relative to other roles the individual may have at a particular point in time and as roles change over time. The Salience Inventory also is helpful in evaluating the values that are unique or predominant in each role, in determining the importance of those values to an individual, and in understanding the impact that simultaneous roles may have on each other or the conflicts that simultaneous roles may induce.

The Salience Inventory is one of several designed by Super and his colleagues to be used in developmental counseling to gather information that counselors need to determine the stage of development, the values, the importance of work, and the level of career maturity of a client. Once the information is gathered, the counselor and client can work to develop a plan of action that takes into account how ready the client is to make career decisions, the client's need to engage in different types of exploration (based on her or his level of preparation), and the client's need for training.

Nevill and Super point out in their *Manual* (1986) that the Salience Inventory "is ready for career counseling use only with ipsative interpretation, a common and valuable use not to be confused with normative interpretation" (p. 15). To facilitate this interpretation, which compares the client's scores on one scale to her or his scores on all other scales of the same instrument, the scale scores are transferred to a profile that permits the individual to see the relative importance of the five roles.

TECHNICAL CONSIDERATIONS

The first step in the development of the Salience Inventory was to define the five life roles and activities related to each of these roles. This work was done by the project directors of the Work Importance Study. Using field trials, the definitions were refined, and the best items—based on subject reactions, item-scale correlations, and project staff consensus—were selected for inclusion in the current version of the inventory.

The internal consistencies of the 15 scales, measured with alpha coefficients, are high, ranging from .81 on Studying within Participation, based on a sample of high school students, to .95 on Studying and Home and Family within Participation and .95 on Studying and Community Service within Commitment, based on a sample of adults. Generally, the alpha coefficients based on adult samples are higher than are those based on student samples.

Test-retest reliabilities are reported in the *Manual* for all 15 scales. However, the length of time between the testing at Time 1 and retesting at Time 2 is not reported making it difficult to evaluate the adequacy of the coefficients. Ten of the 15 test-retest correlations are less than .70. The coefficients for the Value Expectations Scales range from .37 to .67, suggesting that changes in individual scores over time on these scales may reflect measurement error in addition to actual change in value expectations.

Several validity studies have been conducted for the Salience Inventory and have shown that: a) logical differences in commitment to home and to work occur between high school and college samples (Nevill & Super, 1986; Super & Nevill, 1984); and b) rankings of the five roles for high school, college, and adult samples support theoretical expectations (e.g., high school and college students report that most of their participation is within the leisurite role whereas adults report most of their participation is in the worker role).

OVERALL CRITIQUE

The authors have identified the Salience Inventory as a research edition. Since the publication of the *Manual* in 1986, more research on the reliability, validity, and uses of the instrument undoubtedly has been conducted. Counselors and researchers alike, who wish to use the Salience Inventory, look forward to the publication of a revised manual that will help them to more effectively evaluate the inventory.

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Super, D. E., & Nevill, D. D. (1984). Work role salience as a determinant of career maturity in high school students. *Journal of Vocational Behavior, 25,* 30–44.

The Values Scale (VS)

Dorothy D. Nevill and Donald E. Super

Consulting Psychologists Press
3803 East Bayshore Road, P.O. Box 10096
Palo Alto, CA 94303

Target Population: High School, college, and adult populations, reading level eighth grade.

Statement of the Purpose of the Instrument: Measures intrinsic & extrinsic values not measured by other instruments. Developed by the Work Importance Study, an international consortium of vocational psychologists. Values are the objectives sought in behavior and Interests are the activities in which values are sought Measuring values, we measure things closer to actual life choices so we are better able to predict educational or occupational behavior.

Titles of Subtests, Scales, Scores Provided: 21 values scored: Ability Utilization, Achievement, Advancement, Aesthetics, Altruism, Authority, Autonomy, Creativity, Economic Rewards, Life Style, Personal Development, Physical Activity, Prestige, Risk, Social Interaction, Social Relations, Variety, Working Conditions, Cultural Identity, Physical Prowess, Economic Security.

Forms and Levels Available, with Dates of Publication/Revision of Each: Test booklets, Answer sheets (1985). Report Form 1987.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: Manual 1989; Research Ed Manual 1986.

Languages in Which Available: English.

Time: Actual Test Time: 30–45 minutes.

Norm Group(s) on Which Scores Are Based: National Samples 3,000 youths and Adults in U.S. Canada, Yugoslavia & Portugal, Italy, Belgium.

Manner in Which Results Are Reported for Individuals

Report Format/Content

Basic Service: Computer Scored with standard profile Report as well as summary statistics (on IBM PC floppy disks available). Summary stats automatically provided at time of scoring. No narrative.

Options: Hand scorable. No keys. See Manual. pp. 8–9.

Report Format/Content for Group Summaries

Basic Service: Group reports & other database services can be arranged upon special request by contacting Information & Research Services Department.

Scoring

Machine Scoring Service

Cost of basic service per counselee: Non-prepaid Answer sheets, 25 @ $15.00/package, 10 or more $13.00/package then $8.00 scoring fee for each counselee. (1993 prices—subject to change 1/1/94).

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Time required for scoring and returning: 24-hour turnaround.

Hand-Scoring

Scored by: counselor.

Time required for scoring: 20 minutes.

Local Machine Scoring: Not available.

Computer Software Options Available: IBM Summary Stats on floppy available.

Cost of Materials

Specimen Set: Manual, Test Booklet, Answer Sheet, Report Form.

Counselee Materials: Report Form, Test Booklet (reusable), Answer Sheet.

(Contact publisher for current prices.)

Published Reviews:

Drummond, R. J. (1992). Review of the Values Scale. In D. J. Keyser & R. C. Sweetland (Eds.), *Test critiques IX*. Austin, TX: PRO-ED.

Harmon, L. W. (1988). Review of the Values Scale. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to career assessment instruments* (2nd ed.). Alexandria, VA: National Career Development Association.

Luce, T. S. (1991). Review of the Values Scale. In D. J. Keyser & R. C. Sweetland (Eds.), *Test critiques VIII*. Austin, TX: PRO-ED.

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DESCRIPTION

The Values Scale (VS) was developed to measure 21 intrinsic and extrinsic values that "most people seek in life." First published in 1986, the instrument has 106 items, five for each scale, and a final item used in cross-national studies. The printed scale begins with a cover page, continues with two pages of items, and ends with a grid for determining the respondent's occupational group. The front page of the answer sheet records demographic data and the reverse side provides directions, a sample question, and a choice of responses. The stem, "It is now or will in the future be important for me to . . . " precedes such items as, "get ahead quickly in my career" and "do a number of different things during the day." Responses range from 1, which means "Of little or no importance," to 4, which means "Very important." The answer sheets can be machine- or hand-scored. Scores equal the sum of the endorsed responses for the scale items. The accompanying *Manual* (Nevill and Super,1986), sub-titled as a "Research Edition," consists of 41 pages and 26 tables.

One appealing aspect of the VS is that it was specifically designed for use in national and cross-national research. It was developed by Neville and Super out of the Work Importance Study (WIS), which they describe as "an informal consortium of autonomous research teams" in 12 countries throughout Europe, North America, Australia, Asia, and Africa.

The development of items for cross-national use involved numerous steps. Based on each team's review of its national literature, the WIS group sought to design "an instrument to measure work and general values." Selected values were first defined by WIS sub-groups. These were then collectively discussed, revised, reviewed, and revised again. Next, sample items were written following the same approach. These items were reviewed, revised, and assigned to at least two national teams for further refinement. Items were then circulated prior to the next meeting where they were critically reviewed yet again.

The national teams also translated the items into their own languages, reviewed these translations, and pilot tested the items. A 1980 version of the Values Scale contained 10 items for each of the original 23 scales. In the U.S. these scales were administered to two preliminary samples of high school and college students. Item-scale correlations and item-factor analyses were derived. Each team identified the scales it considered worth keeping and selected the five best items. In a 1981 meeting the teams decided which scales to drop and which to retain based on the data gathered. Finally, each scale was reduced to five items, two measuring general values, two measuring work-specific values, and a final item, selected empirically, measuring either. Substantial data sets have been gathered on Portuguese, Croatian, Australian, and Canadian samples, with additional samples from six other countries.

USE IN COUNSELING

Although the test manual recommends that the Values Scale is ready for ipsative interpretation in career counseling, this suggestion may be premature until more complete validity data are available. The authors' encouragement of ipsative over normative interpretation is certainly a prudent compromise. However, it seems wisest to caution against either use with clients at present.

Once supporting data are available, the Values Scale should be appropriate for use with adult career clients in a variety of individual and group settings. The scale may prove particularly helpful for clients who wish to identify and clarify their values as part of a larger self-assessment process. Further, the scale might be most useful in guiding clients toward comparing their individual strengths and challenges with regards to the 21 values it measures.

TECHNICAL CONSIDERATIONS

Initially based on samples of convenience, the U.S. data have now been expanded to include sizeable samples of high school and university students, and adults. The high school sample totalled 2,816 and was chosen to represent "all grade levels, urban, suburban, and rural populations, various socioeconomic levels, major regions of the country and both sexes," (Neville, in press). The methodology used for ensuring a representative sample was not articulated. The college and university sample (2,140 participants) was designed to include arts, letters, science, and technology students from across the United States. Finally, an adult sample of 1,836 subjects was selected to represent persons who were classified as being in the six Holland types. An effort was also made to choose subjects from a variety of geographic regions, ages, both genders, and "the literate socioeconomic levels."

The study sought to provide two measures of reliability for the VS: internal consistency, measured by alpha coefficients and based on all three samples, and stability (computed over a two-to-four-week interval) for the college sample. Alpha coefficients were generally above .65 for all three populations. Unfortunately, test-retest correlations were less than ideal, with several of the five-item scales falling below .70. Additionally, three scales (Ability Utilization, Life Style, and Personal Development) were below .70 on both the internal consistency and the stability measures. Overall, the reliabilities of the scales raise some questions about the confidence one can place in the individual scale scores. The reliabilities also raise concerns about the authors' contention that ipsative interpretations of the values are appropriate.

The validity of the VS is addressed in two chapters of the *Manual*, first under "Use and Interpretation" and again under "Development, Reliability, and Validity." Although items on several scales seem quite similar, face validity appears to be adequate. It is noticeable that the Manual does not present the definitions of the values which were used in developing the instrument. Additional concerns are raised when inspecting the data on construct validity. The authors note that: "The most important types of validity data are those that show that the instrument actually measures what theory has said it should measure." However, no explanation of what constitutes theory is made and no studies were initially reported which directly addressed this issue.

Some of the earlier studies included in the *Manual* were difficult to evaluate because many were unpublished and not easily available. However, an unpublished study by Yates (1985), cited in the Manual was provided and raised some intriguing questions. Based on a sample of 383 military personnel, Yates reported that "Realistic individuals significantly valued Physical Prowess more than did Enterprising types and, less expectedly, that Social types valued Economic Security more than did Realistic." In fact, the most striking aspect of the Yates study is the lack of differences found, considering that five Holland types and 21 values were used. In the same study, Yates also looked for differences by grouping subjects according to age. Though no specific hypotheses were presented, the results were interpreted as supportive of the construct validity of the scale. Without clear predictions based on theory or more carefully reasoned rationales, the possibility of mistakenly concluding that these findings corroborated what was expected seems problematic. The results of Yates' study, while interesting, seem difficult to interpret as clear support for the construct validity of the instrument.

More recently a study by Macnab and Fitzsimmons (1987) and a study conducted by Nevill (1988) presented more supportive data on the concurrent validity of the VS. The recent improvement of the U.S. norm groups is also encouraging. Although the preliminary data are generally promising, there is a clear need for additional studies that address the validity of the scales of this instrument in a clear and unequivocal manner.

OVERALL CRITIQUE

Based on the reliability data and the limited validity data for the scales of this instrument, it seems appropriate that the authors sub-titled the Manual as a "Research Edition." Similar caution is needed in other areas, as well. For example, the authors state that "the VS can be used with upper elementary or middle school pupils" without explaining exactly how they reached this conclusion or what that "use" would be. In addition, the authors state that the "VS is now ready . . . for exploratory use in career and vocational counseling." Although the word "exploratory" seems well advised, there is a danger that not all readers will take the word exploratory seriously enough. This seems particularly likely because the authors suggest that the scales can be used in an ipsative manner and they provide a case that demonstrates such use in counseling. No rationale or data are provided as support for the ipsative use of the scales in career counseling, nor are data provided on treatment effects. Although the VS has promise as an instrument, additional research seems necessary, particularly research on the reliability and validity of the individual scales. If the scales are to be used in career counseling, their effectiveness in that capacity will also need to be studied.

REFERENCES

Macnab, D., & Fitzsimmons, G. W. (1987). A multitrait-multimethod study of work-related needs, values, and preferences. *Journal of Vocational Behavior, 30*, 1–15.

Nevill, D. D. (in press). In Super, D. E., & Sverko, B. (Eds.). *Life roles, values, and career: International findings of the Work Importance Study*. San Francisco, CA: Jossey-Bass.

Nevill, D. D., & Super, D. E. (1986). *The Values Scale: Theory, application and research: Manual (research edition)*. Palo Alto, CA: Consulting Psychologists Press.

Yates, L. (1985). *The Values Scale: Assessment of adults involved in career development.* Unpublished manuscript.

NOTE: Portions of this review were abridged from the first author's original review in the *Tenth Mental Measurements Yearbook* with permission of the Buros Institute.

CHAPTER IX

Career Development/Maturity Measures

The Adult Career Concerns Inventory (ACCI)

Donald E. Super, Albert S. Thompson and
Richard H. Lindeman

Consulting Psychologists Press
3803 East Bayshore Road, P.O. Box 19906
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Target Population: High School through Adult Norm by age groups under 25, 25–34, 35–44, 45 and up given in percentiles.

Statement of the Purpose of the Instrument: Measures a client's career planning and concern with Career Development at the various stages of Life as Donald Super has defined them. Determines client's career stage and Level of Career Planning. For research and exploratory use in counseling.

Titles of Subtests, Scales, Scores Provided: Four Stages each with three Substages: (A) Exploration: (1) Crystallization, (2) Specification, (3) Implementation; (B) Establishment: (1) Stabilizing, (2) Consolidating, (3) Advancing; (C) Maintenance: (1) Holding, (2) Updating, (3) Innovating; (D) Disengagement: (1) Deceleration, (2) Retirement Planning, (3) Retirement living.

Forms and Levels Available, with Dates of Publication/Revision of Each: Current version available was published in 1988.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: Manual for Research published 1988.

Languages in Which Available: English.

Time: Actual Test Time: 13–30 minutes.
Total Administration Time: 15 minutes to score.

Norm Group(s) on Which Scores Are Based: Norms given for ages under 25, 25–34, 35–44, and 45 and up in percentiles.

Manner in Which Results Are Reported for Individuals
Types of Scores: Percentile ranks.

Report Format/Content
Basic Service: Basic profile. No interpretive narrative.

Report Format/Content for Group Summaries
Basic Service: Group Summaries automatically compiled for all answer sheets scored at same time.

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Scoring

Machine Scoring Service

Cost of Options: Hand Score at $3.20 each client.

Hand-Scoring

Scored by: counselee; clerk; counselor.

Local Machine Scoring: Not available.

Computer Software Options Available: Not available.

Cost of Materials

Specimen Set: Manual, Test Booklet, Answer Sheet, Profile—$31.00.

Counselee Materials: Question Sheet and Profile on one page—$9.00 (for 25 for prepaid).

Published Reviews:

Brown, J. B. (1988). Review of the Adult Career Concerns Inventory. In D. J. Keyser & R. C. Sweetland (Eds.), *Test critiques VII*. Kansas City, MO: Test Corporation of America.

Herr, E. L., & Niles, S. G. (1988). Review of the Adult Career Concerns Inventory. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to career assessment instruments*, (2nd ed.). Alexandria, VA: National Career Development Association.

Reviewed By

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DESCRIPTION

The Adult Career Concerns Inventory (ACCI) is a 61-item instrument that assesses the intensity of career concerns of adults in the labor force who are rethinking their careers and adolescents who are considering entry into an occupation. The current version of the ACCI has a long evolution that parallels Donald E. Super's Career Pattern Study, research that followed the vocational development of adolescents into adulthood. The ACCI is best understood within the context of Super's evolving ideas on career development.

Briefly, Super's early research focused on the career development of adolescents, leading to his well-known model of career maturity. When Super shifted his focus from adolescents to adults, he found that many of the concepts developed on adolescents were not applicable to adult career development. The concept of career adaptability (Super & Knasel, 1979) was proposed to be more relevant to understanding adult career development than concepts such as career maturity. Career adaptability, defined as the exploration attitudes and planfulness that are basic for coping with changing work and work conditions, guided the development and validation of the ACCI.

Super has translated the attitudes and planfulness of career adaptability into 60 career concerns (60 of the 61 ACCI items) and has organized the career concerns as they relate to five major stages, each with three substages of adult career development (substages in parentheses): Exploration (Crystallization, Specification, Implementation), Establishment (Stabilizing, Consolidating, Advancing), Maintenance (Holding, Updating, Innovating), and Disengagement (Deceleration, Retirement Planning, Retirement Living). Therefore, the 60 career concern items include five items for each of the 12 substages. The items are written at a 8th grade level and are contained on a single sheet of paper with a separate machine-scorable answer sheet. A unique feature of the ACCI is that the 60 items are ordered on the inventory in terms of the major stages and substages, that is, the items are grouped in sets of five. Thus, the first five items a respondent answers are from the Crystallization substage of the Exploration stage, the next five items are from the Specification substage of the Exploration stage, and so on. The directions request that the respondent rate the 60 career concern statements according to "How strong are these concerns at this point in your career," on a 5-point scale from 1 = "no concern" to 5 = "great concern." The 61st item is unscored and simply provides information on the respondent's concern for career change from 1 = "not considering" to 5 = "made a career change."

Once the ACII is completed it can be self- or machine-scored. The ACII yields an average score (sum of the item scores divided by 5, the number of items) for each of the 12 substages and a percentile normed score for each of the 4 major stages. The average substage raw score is plotted on the same 5-point item scale of career concerns; that is, 1 = None, 2 = Little, 3 = Some, 4 = Considerable, and 5 = Great. Preliminary norms to translate the raw scores into percentile scores for the four major stages are provided for women and men.

Although a self-scoring option is available, most counselors, once they read the self-scoring directions, may decide either to have the ACCI machine-scored or to self-score the ACCI. It took the reviewer 20 minutes to understand the directions and self-score his ACCI. The directions are too complicated and technical for clients to self-score the ACCI. For example, the first two steps in scoring the ACCI are: 1) "enter the distribution of ratings for each group of five items in each substage" and 2) "then compute the average score for the substage by dividing the weighted sum by the number of items in the group." To self-score the ACCI requires introductory statistical skills and a calculator.

USE IN COUNSELING

Super and associates broadly describe two uses of the ACCI: a) career counseling and planning, and b) needs analysis in groups of employees and adult applicants for counseling. Since the ACCI is theory-based, Super urges counselors to become familiar with career development literature before using the inventory. Although references on career development theory are provided in the *Manual* (Super, Thompson & Lindman, 1988), it would have been much more helpful for practicing counselors to have adult career development explained and integrated with the ACCI interpretations in the manual. When used with a counselee, Super suggests that counselors also consider applying his developmental model for assessment and counseling. In particular, the ACCI can be used to evaluate career maturity planfulness and exploration and the counselee's understanding of present and later stages. Overall, the manual provides a very limited description of how to use the ACCI in counseling.

From this reviewer's perspective, it would seem that the ACCI would be very well suited to provide information prior to the initial interview. Instead of spending time and effort during the first counseling session exploring the client's career problems, the ACCI could provide information to help focus the initial interview, an important consideration when working with adults. The scales could be used, not as substage or stage scores, but rather as straightforward indicators of career concerns. In such a case, the ACCI becomes a broad-band approach to assessing most career concerns presented by adults, stage-free. Some of the career concerns that have been relegated to latter stages possibly should be of continued concern through the life span, depending on the client's occupational field. For example, Updating is assigned to the maintenance stage. It would seem that Updating (e.g., "Keeping up with new knowledge, equipment, and methods in my field") can be a concern for workers throughout the life span, especially employees in the technical fields. Another example is Retirement Planning (e.g., "Setting aside enough assets for retirement"), which is a substage of Disengagement. Many clients should begin financial planning early, and in such cases the ACCI also could be used as a proactive measure. Rather than focusing exclusively on current career issues that are reported to be of considerable or of great concern, there may be concerns that the client should be attending to earlier or later in her or his career. Thus, the ACCI may have potential benefits for education and proactive interventions.

TECHNICAL CONSIDERATIONS

The manual provides limited psychometric data to support ACCI score interpretations, especially the stage and the substage scores, and the technical information described is, in general, unimpressive. Much of the research reported is based on unpublished doctoral dissertations on earlier versions of the ACCI.

Since a hierarchical model of career development guided the construction of the ACCI, structural studies should be able to replicate Super's model. Two studies reported in the manual evaluated the structural properties of the stages and the substages, yielding mixed results. Mahoney (1986), for example, in an exploratory factor analytic study of the structure of the ACCI with a sample of 393 corporate employees, failed to find a hierarchical structure. Mahoney's results seem to support a three-factor model of the relations of the stages and substages. The first factor combined the Establishment and Maintenance stages and the second and third factors included Exploration and Disengagement stages and substages, respectively. Because the ACCI relies on Super's stage model for interpretive purposes, it is important that future studies resolve questions of the structural properties of the stage and substage scales.

Two reliability studies on the internal consistency of the ACCI scales and subscales are reported. Cronbach alpha coefficients for a sample of 68 staff members of a technical school and 331 employees of a international corporation ranged from the .80s to above the .90s for the stage and substage scales. Although the size of the alpha coefficients were similar to coefficients reported for established career measures, internal consistency estimates are needed for other samples, especially career counseling clients. Unfortunately, test-retest coefficients are not reported, leaving unknown the stability of stage and substage scales.

Norms are presented separately for women and men and are used for converting raw stage scores (but not substage scores) into percentiles. The norm tables are further subdivided into age groups to match the major stages (i.e., under 25, 25–34, 35–44, 45 and over). The test authors justifiably urge caution when using the norm data. The norm group is limited by its size (225 females and 123 males) and unrepresentativeness, and lacks a sufficient number of older (60–65) and younger (18–22) respondents.

Critical information for conducting an adequate evaluation of the ACCI is missing from the manual. For example, construct validity and studies examining how the ACCI scales relate to other similar or dissimilar scales are not reported. The manual contains no description of how the career concerns were selected. Information on the counseling impact of the inventory and, more importantly, an evaluation of the self-scoring procedures are not reported.

OVERALL CRITIQUE

The ACCI is unique among the many measures developed to assist counselors; it addresses the career-related problems presented by adults using a developmental framework. Being the only game in town, it has much to offer. On the other hand, users need to be cautious since the ACCI has many limitations. Foremost, among the limitations, is the lack of construct validity evidence for the scales. The manual does not even provide definitions of the scales, only scale labels. It is left to the user, after reading the items and adult development theory, to supply their own meaning for the various stage and substage scales. As suggested earlier (see above discussion of uses in counseling), counselors could use the ACCI to discover various career concerns, and allow initial interviews to focus on those concerns that are most evident. Then, the meaning of the career concern statements (and possibly the scales) when discussed with individual clients, may become more apparent.

Previous research, as cited in the manual, has not adequately supported Super's adult career stage theory. Furthermore, as pointed out in the manual, the ACCI stage-related norms are inadequate for most counseling purposes. Counselors, therefore, should not rely on stage-related interpretation of ACCI scales. If the stage-based interpretations are not used, what remains of the ACCI? It leaves the counselor with a unique set of career concerns, that could be supplemented by other career concerns drawn from the counselors professional knowledge and experience, to explore and discuss with the client.

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Mahoney, D. J. (1986). *An exploration of the construct validity of a measure of adult vocational maturity.* Unpublished doctoral dissertation, Teachers College, Columbia University.

Super, D. E., & Knasel, E. (1979). *Development of a model, specifications, and sample items for measuring career adaptability (vocational maturity) in young blue-collar workers.* Cambridge, United Kingdom: National Institute for Careers Education and Counseling.

Super, D. E., Thompson, A. S., & Lindman, R. H. (1988). *Adult Career Concerns Inventory: Manual for research and exploratory use in counseling*. Palo Alto, CA: Consulting Psychologist Press.

NOTE: Portions of this review were abridged from the author's original co-authored review in Volume VII of *Test Critiques* with permission of Pro-Ed of Austin, TX.

Assessment of Career Decision Making (ACDM)

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Target Population: High school and college students.

Statement of the Purpose of the Instrument: The ACDM is used to help high school and college students select appropriate and satisfying careers. Research shows that the way an individual chooses a career is related to his or her eventual career satisfaction. The ACDM tells you whether, and to what extent, the student is willing to take responsibility for a career decision, identifying those individuals who are prepared to make a realistic choice and those who must resolve other problems first.

Titles of Subtests, Scales, Scores Provided: Decision-Making Styles: Rational, Intuitive, Dependent. Decision-Making Tasks: School Adjustment, Occupation, Major.

Forms and Levels Available, with Dates of Publication/Revision of Each: One form.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1985.

Languages in Which Available: English.

Time: Actual Test Time: 10 to 20 minutes.
Total Administration Time: 10 to 20 minutes.

Norm Group(s) on Which Scores Are Based: 550 high school students and 2,495 college students, from various sites throughout the U.S.

Manner in Which Results Are Reported for Individuals
Types of Scores: Raw scores, T-scores, and percentiles.
Report Format/Content
Basic Service: Please see enclosed test report sample.

Report Format/Content for Group Summaries
Basic Service: Group report available only on request.

Scoring
Machine Scoring Service
Cost of basic service per counselee: As little as $11.90.
Time required for scoring and returning: 24 hour turnaround plus time for mail each way.
Hand-Scoring: Not available.

Local Machine Scoring: Not available.

Computer Software Options Available: Prepaid Mail-In Answer Sheets.

Cost of Materials

Specimen Set: Not available.

Counselee Materials: Kit—$95.00. (Includes 4 WPS TEST REPORT, prepaid mail-in answer sheets for computer scoring, and one manual).

Published Reviews:

Eberhardt, B. J. (1989). Review of the Assessment of Career Decision Making. In J. C. Conoley & J. J. Kramer (Eds.), *Tenth mental measurement yearbook*. Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

Prediger, D. J. (1988). Review of the Assessment of Career Decision Making. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to career assessment instruments* (2nd ed.). Alexandria, VA: National Career Development Association.

Vacc, N. A. (1989). Review of the Assessment of Career Decision Making. In J. C. Conoley & J. J. Kramer (Eds.), *Tenth mental measurements yearbook*. Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

Reviewed By

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DESCRIPTION

The Assessment of Career Decision Making (ACDM) is a 94-item true/false inventory that assesses major, career, and academic decision-making styles. The three 10-item Decision-Making scales are Rational, Intuitive, and Dependent. The Decision-Making Tasks scales include three major areas: School Adjustment (made up of three eight-item scales: Satisfaction With School, Involvement With Peers, and Interaction With Instructors), Occupation, and Major (both 20-item scales). Testing time should be less than 40 minutes. The items on the test are divided into four categories which are consistent with the scales above: Decision Making, Feeling About School, Occupational Plans, and Academic Major. The true/false items that make up the ACDM are all "I" statements which are generally brief and to the point. An example of the "I" statement format is Item 1 (a Rational Decision-Making Style question): "I am very systematic when I go about making an important decision." The average reading level for items on the ACDM is sixth-grade.

The ACDM has been designed to be used with the publisher's *Career Planning Program*. Intended for a high school or college class in career planning, this program is composed of 15 two-hour instructional units. A *Leader's Handbook* gives step-by-step instructions for conducting the program. A *Student Handbook* gives a series of activities that explore various decision-making styles and career interests. The ACDM is used with this program to help students to formulate a career goal and plan for implementing that goal.

The ACDM is based on the Harren Model of Career Decision Making (Harren, 1979) which grew out of Harren's research on career decision making. Tiedeman and O'Hara's (1963) theory and research plays a significant role in Harren's model, as does the research by Dinklage (1969), who designated eight decision making styles of adolescents. Three of these (Rational, Intuitive, and Dependent) are used in the ACDM.

A significant feature of the ACDM is the computer-generated narrative provided to counselors and students. There is a group report that includes not only scale scores, but also scores on a validity indicator. Counselors can use the ACDM to identify students who may profit from further individual or group counseling. Also, a counselor report (approximately nine pages) includes comments about the validity of the test, a summary of test results, a narrative interpretation of each of the scales of the ACDM, sections that compare pairs of scales, and critical items. A three-page student report gives an overview of the student's score on the nine ACDM scales as well as a narrative interpretation. Based on a student's scores, specific recommendations are made about decision making, school participation, and suggestions for exploring interesting majors or occupations.

USE IN COUNSELING

There are three basic ways in which counselors can use the ACDM in career counseling: to screen clients who can benefit from career counseling or career classes, to make hypotheses about the student prior to seeing the student for counseling; and to help clients with their career decision making.

For use as a screening device, the ACDM has many positive features. By identifying those students who score high on Intuitive or Dependent decision-making styles, opportunities can be provided to help them improve their career decision-making approach. Likewise, isolating students who have low Satisfaction With School, low Involvement With Peers, and/or low Interaction With Instructors can give counselors an occasion to address issues that may interfere with career plans. Career counseling or classes may be offered to those students who have not made a commitment, or feel uncertain about, their Occupation or Major.

The manual gives six examples of using the ACDM to interpret a student's profile prior to seeing them. Some of these examples seem to make conclusions that go beyond the data at hand. For example, in Case F in the ACDM Manual (Buck and Daniels, 1985, p.40) Mike has a low level of Involvement With Peers and a low Interaction With Instructors score on the ACDM. The manual concludes that "Mike is not a good candidate for a group career intervention since his Involvement With Peers score is so low." It seems inappropriate to draw this conclusion without talking to Mike first. There may be effective ways to prepare him for such a group.

Counselors may find it very helpful to go over the scores on the ACDM with their clients. A discussion of scores on the Rational, Intuitive, and Dependent scales can prompt a dialogue about how career decisions are made, helping students to understand their own decision-making style. Likewise, analysis of the School Adjustment Scales can help students to focus on their Satisfaction With School, Involvement With Peers, and Interaction With Instructors, all of which are important in achievement of career goals. Discussing the degree of commitment to a major or occupation is central to career counseling and can lead to the assignment of ability measures or interest inventories. Using the student report of the ACDM may be helpful. However, it would be just as appropriate to use a counselor explanation along with a hand-scored profile. In an earlier review, Vacc (1989) describes the student report as "inappropriately dogmatic," criticizing the report as not being sufficiently tentative or flexible.

TECHNICAL CONSIDERATIONS

The ACDM is standardized on data from 10 studies on 550 high school and 2,495 college students. Of the 550 high school students in the sample, 60% were high school juniors; the others were freshmen, sophomores, or seniors. Although the answer sheet gives an opportunity for students to signify that they are in grade 6 or below, or grades 7–9, no norms are available for those in grades 8 or below, and the high school norm groups are small in size. Also, the norm groups contain a small percentage of minorities. Like many other inventories of this type, the standardization was not planned, but rather is a composite of studies completed over a number of years. In general, age and grade differences on the ACDM appear to be quite small.

Both internal consistency and test-retest reliabilities are reported. For studies that use the present form of the ACDM, internal consistency reliabilities range from .49 to .84 on the Decision-Making Style scales, and from .58 to .92 on the other scales. For test-retest reliabilities over a two-week period, reliabilities ranged from .66 to .84 on two college samples. No test-retest reliability data is available for high school students.

The manual describes a number of studies that deal with criterion-related validity for each of the scales on the ACDM. Also, construct validity was determined by comparison with a number of career development measures as well as psycho-social adjustment measures. Often the strength of relationships is not high. Intercorrelations on the ACDM scales are also given. A variety of data are presented, but it is difficult to make strong statements about the validity of this instrument, as there do not appear to be consistent and coherent trends. However, for an instrument measuring concepts that are relatively broad in nature, clear validity data would be difficult to obtain. Unfortunately, earlier versions of the ACDM that were reported as a part of the validity data make interpretation of the data more complicated.

OVERALL CRITIQUE

Counselors are likely to find that the ACDM can be an attractive instrument, either for screening students who can profit from counseling or for use in individual, group counseling, or class use. The scales which deal with three different Decision-Making styles (Rational, Intuitive, and Dependent), Adjustment to School, Satisfaction With School, Involvement With Peers, and Interaction With Instructors are relevant to practical career-planning issues. Even more directly related are the Occupation and Major Scales which assess the commitment and certainty the student feels towards his or her choice of occupation or major. These scales have an attractive simplicity in their brevity and concept.

The narrative report, averaging nine pages in length, gives detailed information about the meaning of the scores for each student. Counselors who become familiar with the ACDM are likely to find the narrative unnecessary, and will get sufficient information from the nine scales of the ACDM. In such a situation, a hand-scored version would be very satisfactory. Unfortunately, test scoring costs are high for such a relatively uncomplicated instrument (between $7.90 and $9.50 per student).

Regarding technical considerations, there are areas that need improvement. There is a need to provide more normative data for people of color and high school students. Continued development of construct validity data would be useful for both high school and college groups. However, there are sufficient data for counselors to use the scales, particularly with college students.

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Career Beliefs Inventory (CBI)

John D. Krumboltz

Consulting Psychologists Press
3803 East Bayshore Road
Palo Alto, CA 94303

Target Population: 8th grade reading level; junior high school, high school, college students and adults planning careers; people involved in career transitions; adults planning retirement.

Statement of the Purpose of the Instrument: A counseling tool designed to help people identify career beliefs that may be preventing them from achieving their career goals. Help counselors initiate explorations of the career assumptions on which their clients operate. The CBI is an application of cognitive theory. It assesses the "schemas" with which people have learned to organize their approach to career problems.

Titles of Subtests, Scales, Scores Provided: 25 scales plus administrative index; scales are organized under 5 headings: My Current Career Situation; What Seems Necessary for My Happiness; Factors that Influence my Decisions; Changes I am Willing to Make; Efforts I am Willing to Initiate.

Forms and Levels Available, with Dates of Publication/Revision of Each: Question Booklet and Answer Sheet 1991.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1991 Manual.

Languages in Which Available: English.

Time: Actual Test Time: no time limit—30 minutes usual.

Norm Group(s) on Which Scores Are Based: Junior High, High School, Undergrads, Full-time adult students, Employed Adults, Unemployed Adults.

Manner in Which Results Are Reported for Individuals

Types of Scores: Scores range from 10–50. Scale scores are 10× the average item weight in each scale.

Report Format/Content

Basic Service: Profile computer generated

Report Format/Content for Group Summaries

Basic Service: Group Summaries available upon request. Contact Information and Research Services For Data Base Services.

Scoring

Machine Scoring Service

Cost of basic service per counselee: Prepaid answer sheets $40.00/package of 10; test booklets $30.00/package of 25.

Time required for scoring and returning: 24 hour turnaround + mail time. Palo Alto; Washington, DC

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Hand-Scoring
Scored by: clerk; counselor.
Time required for scoring: 40 plus minutes.
Local Machine Scoring: Not available.

Computer Software Options Available: Not available.

Cost of Materials
Specimen Set: Booklet, Answer Sheet, Manual, prepaid scoring.
Counselee Materials: Test Booklet (reusable); Answer Sheet. (Contact publisher for current prices.)

Published Reviews: None to date.

Reviewed By

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DESCRIPTION

The Career Beliefs Inventory (CBI) is a 96-item instrument that purports to be a "counseling tool designed to help people identify career beliefs that may be preventing them from achieving their career goals" (Krumboltz, 1991, p. 1). Respondents specify their degree of agreement or disagreement with the content of each item according to a five-point scale. Approximately 30 minutes are required to complete the inventory. Items include such statements as: "Getting a college education is necessary to get a good job," "My work activities must be interesting to me," and "The location of my job is not important to me."

Items are grouped into 25 scales. Each scale has no fewer than two and no more than eight items. For most scales, each concept within the scale is measured by both a positively and negatively stated item. The counselee responds to the questions on a standard answer sheet which is returned to the publisher for scoring. Turn-around time is approximately a week. Although no information is provided in the CBI manual on how to hand-score the CBI, the author indicates that this can be accomplished (J. D. Krumboltz, personal communication, Feb. 29, 1993). The current and only published version was preceded by a research version.

Scores for each scale are weighted so that the range of scores is 10–50. Although no research has been reported by the publisher to support a particular cut point, counselors are encouraged to identify potential blocks to career goals for scale scores less than 39 based on an interpretation of the scale descriptors.

The manual suggests how low and high scores might be interpreted for each scale.

USE IN COUNSELING

Since no research has been reported that relates low or high scores to attaining or blocking the achievement of career goals, the instrument's items may be best used as a structured framework or springboard for in-depth discussions with a counselee. For example, an extensive discussion can be held on the counselee's response to the item "I can't get into the work I'd like because there are too few opportunities." If a person agrees with this statement, one can congratulate the person for having an accurate grasp of the local labor market, or provide realistic figures that contradict this person's belief, or suggest that this person relocate to another area where the jobs of interest are more available, or propose other occupations that could be of interest to the client. If the person disagrees with this statement, then he or she apparently is able to find the work he or she likes, and further discussions can be held on what kind of work that is, how opportunities have been discovered, and so on. Extensive discussions on the item level can give the counselor the opportunity to discover if there are any misconceptions that are preventing the counselee from pursuing a particular career. The counselor needs to determine whether these particular notions about the world-of-work are inaccurate and if they are acting as career inhibitors. Probing deeper into the topic may or may not determine the existence of a problem. In this vein, the author himself indicates that "just because a belief is false does not necessarily make it troublesome" (Krumboltz, 1991, p. 1).

The use of the items as the basis for a structured interview, rather than an attempt to interpret scale scores, may be the instrument's greatest contribution to career development and career counseling. Case study examples are provided to illustrate how the counselor might provide a useful discussion with the counselee. Walsh (1994) suggests that the CBI could be a diagnostic tool for counselors and that "we have much to learn about the usefulness of the CBI in a diagnostic and counseling context." (See also Krumboltz, 1994).

TECHNICAL CONSIDERATIONS

Norms are based on about 7,500 individuals in 12 states in the United States, and in Australia. Percentile ranks for each scale are provided for eight groups, including employed adults, unemployed adults, male employed adults, female employed adults, full-time students, undergraduate college students, high school students, and junior high school students. Evidence that the norms are nationally representative of the United States as a whole, or that various minority subgroups are proportionally represented, or even that the data have been collected from individuals representative of the groups listed above, is lacking. Since it is not shown that scale scores are related to career goal attainment (or failure), normative information may not have utility for individual counseling. If the groups on which the norms are based are representative, the norms might provide some notion of typical beliefs of selected groups.

Two types of reliabilities are provided in the Manual: test-retest and internal consistency. Test-retest reliabilities for high school students after a one-month interval range from .35 to .74. For college students the reliabilities are lower (.26 to .66 for a three-month interval), perhaps indicating a lower stability or instability of the scales for this group, or a reflection of this group's change of beliefs over a longer period of time. Most internal consistency reliabilities are in the .40s and .50s. These reliability coefficients appear to be quite respectable given so few items in each scale, except when one considers that the two item scales are based on the same item content—one worded positively and one negatively. In these instances, one might expect to have internal consistency reliabilities much higher than those reported.

Although there is evidence that a few of the scales are related to self-report measures of occupational and school satisfaction, the CBI may measure something unique in the career development arena. For example, evidence is provided that the CBI is different from such interest measures as the Strong Interest Inventory or the Self-Directed Search. The inventory also seems to be generally measuring something different from the Myers-Briggs Type Indicator, the Fundamental Interpersonal Relations Orientation-Behavior, the State-Trait Anxiety Inventory, and My Vocational Situation. It also seems to be reasonably independent of ability or aptitude. If we know what it is not, the question then becomes: What does the CBI measure and what application does this have?

The author laments that there is no single meaningful criterion against which one can validate career beliefs (Krumboltz, 1991, p. 17). If the instrument is to have any meaningful utility beyond that of an interview schedule, there must be some evidence showing that high or low scale scores on this instrument are likely impediments to attaining career goals or relate to enhanced achievement. This has not been provided in the manual accompanying the CBI.

Some fairly interesting data are presented in the manual that suggest the existence of a four-factor structure (as opposed to the 25 scales currently reported on the results sheet) in the instrument. Use of the four-factor structure may lend some additional utility to the instrument. In his interpretation of the results, Krumboltz suggests that:

> the picture emerging from this analysis represents a consistently high-scoring individual as one who believes in hard work, explores alternatives, is self-reliant, and complies with normal expectations. A consistently low-scoring individual sees little value in hard work, wants to proceed in one direction, depends on help from others, and resists structure. (Krumboltz, 1991, p. 24)

What is needed, however, is scientifically supported verification that specific types of profiles are more likely to encourage career attainment in particular families of occupations or kinds of career environments.

OVERALL CRITIQUE

From the above comments it is evident that the items of the CBI might generate interesting discussions between a counselor and client. This was supported by Vansickle when he stated that "the instrument should allow counselors to focus their questions, and it may aid counselees in making better decisions based on increased personal information" (Newsnotes, 1992, p. 10).

How the scale scores relate to career progress or development has not been established, however. Without that information, it is hard to know what can validly be interpreted from the information provided on the score report. For example, it is not known what effect a counseling intervention has on the scale scores. Also, it has not been specifically shown that high or low scale scores or responses on the items relate to career attainment or failure.

Because the instrument seems to tap some unique constructs, it could have some promise. Before that promise is realized, much more research is needed to determine if what it does measure provides some value to the client, to the counselor, or to the career development process. Potential users should consider the observation of Jepsen who stated that "the cost in time and money of obtaining the 25 scale scores must be weighed against the minimal gains in information due to the low reliability and unknown validity of the scales" (Newsnotes, 1992, p. 10).

Hand scoring is strongly discouraged due to the five-point scale, weighting of the scales, reverse scoring, and differing numbers of items per scale. Special instructions would need to be obtained from the publisher to accurately accomplish this task. In addition, the publisher would need to provide information on which items are used in the formulation of which scales, information which is not currently present in the manual accompanying the test.

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Career Decision Scale (CDS)

Samuel H. Osipow, Clarke G. Carney, Jane Winer, Barbara Yanico and Maryanne Koschier

Psychological Assessment Resources, Inc.
P.O. Box 998
Odessa, FL 33556

Target Population: High school and college students.

Statement of the Purpose of the Instrument: Intended as a rapid and reliable instrument for surveying students about their status in the decision-making process; provides estimates of career indecision and its antecedents as well as an outcome measure for determining the effects of interventions relevant to career choice and/or career development.

Titles of Subtests, Scales, Scores Provided: Certainty; Indecision. Percentile scores provided for both scales, based on four normative groups: College student males; High School student males; College student females; High school student females. Percentiles are available for Adults seeking continuing education and Women returning to college.

Forms and Levels Available, with Dates of Publication/Revision of Each: Career Decision Scale (1976, 1987).

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1987.

Languages in Which Available: English.

Time: Actual Test Time: 10–15 minutes.
Total Administration Time: 10–15 minutes.

Norm Group(s) on Which Scores Are Based: College males, college females, high school males, high school females (separate norms for each group).

Manner in Which Results Are Reported for Individuals

Types of Scores: Percentiles with verbal labels (high, middle, low) for each scale.

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service: Not available.

Hand-Scoring

Scored by: clerk; counselor.

*Time required for scoring:*5 minutes.

Local Machine Scoring: Not available.

Computer Software Options Available: Not available.

Cost of Materials

Counselor Materials: CDS Kit (including manual and 50 test booklets)—$32.00. (Manual alone is $10.00).

Counselee Materials: CDS Test Booklets (consumable) package/50—$25.00.

Published Reviews:

Harmon, L. W. (1985). Review of the Career Decision Scale. In J. V. Mitchell, Jr. (Ed.), *Ninth mental measurements yearbook, Vol. II* (p. 270). Lincoln, NE: University of Nebraska Press.

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Slaney, R. B. Review of the Career Decision Scale. In D. J. Keyser & R. C. Sweetland (Eds.), *Test critiques, Vol. III* (pp. 138–143). Kansas City, MO: Test Corporation of America.

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DESCRIPTION

The Career Decision Scale (CDS) has been described by Meier (1991) as the "premier scale in the indecision literature." It was introduced in 1976 and reviewed by this author in the Ninth Mental Measurements Yearbook (Harmon, 1985) as "extremely well developed and researched for such a relatively new inventory." Nearly 20 years after its development and nearly 10 years after its most recent comprehensive reviews, it is time to look at how the CDS has aged.

The CDS was originally developed in an attempt to match specific antecedents of educational or vocational indecision with specific interventions. Indeed, Osipow, Carney, and Barak (1976) discussed each of the 16 aspects of indecision that now form items 2–18 of the CDS as describing indecision "types." These items were based on experience in interviewing clients.

Today the CDS is published in a third revision dated 1976 and accompanied by a manual revised in 1986. The inventory contains 19 items, the two-item Certainty scale, the 16-item Indecision scale, and an open-ended question that allows respondents to put their concerns in their own words. The 18 items comprising the two scales are answered by indicating how like the respondent the item is on a four-point scale where 1 is "not at all like me" and 4 is "exactly like me." Scores on the Certainty scale range from 2–8 with a high score indicating greater certainty. Scores on the Indecision scale range from 16–64 with high scores indicating greater uncertainty.

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The purposes of the CDS are to provide an estimation of career indecision for high school and college students and to assess the effects of interventions targeted toward the career development of these age groups. No specific reading level is suggested, instead, it is suggested that those making "normal academic progress" will experience no difficulty in answering the questions. Administration to groups or individuals is appropriate since the instructions are clear. A sample question, "I am excited about graduating and going to work," is given. The four-page booklet is attractive and easy to read. The manual suggests that most respondents should take no more than 10–15 minutes to complete the CDS. A grid is provided in the booklet for recording scores. Percentile scores for the two subscales and easy instructions for scoring are contained in the manual.

USE IN COUNSELING

The manual suggests that Certainty scores at or below the 15th percentile and Indecision scores at or above the 85th percentile be considered significant. Furthermore, the combination of a low Certainty score with a high Indecision score is considered to be an indicator of need for intervention, whereas the opposite, the combination of a high Certainty score with a low Indecision score is considered to be an indication that the respondent feels little need for intervention. The combinations of high Certainty scores with high Indecision scores and low Certainty scores with Low Indecision scores are possibly invalid because they are logically inconsistent. Krumboltz' (1992) caution that indecision is not always bad and may be important to keep in mind when using the CDS. Depending on the developmental stage of the respondent, indecision might be entirely appropriate.

Other uses of the CDS include assessment of group members to aid in planning group interventions and evaluation of both group and individual interventions. Since the CDS was initially developed to lead to specific intervention strategies, item responses may be rich sources of intervention ideas.

TECHNICAL CONSIDERATIONS

Norms are provided for the Certainty scale and the Indecision scale for high school students and college students by sex and year of study. The high school norm groups range in size from 132 (twelfth grade males) to 251 (ninth grade males). The college norm groups range in size from 31 (freshman males) to 76 (junior males). In addition, there are norms for the Indecision scale for adults seeking continuing education (N = 81)and women returning to college (N = 67).

Osipow, Carney and Barak (1976) reported test-retest correlations of .90 and .82 for two groups (N = 56 and 59) of college students in psychology courses. Slaney, Palko-Nonemaker, and Alexander (1981) reported a test-retest correlation of .70 for 857 college students in an introductory Psychology course over six weeks.

Impressive validity evidence based on correlations with related measures, group comparisons, treatment studies, and relationships with other personality variables is also provided. Originally, Osipow, Carney, and Barak (1976) reported significant decreases in indecision for students who participated in courses in educational-vocational exploration. A recent illustrative study by Taylor and Poma (1990) found: (a) a correlation of −.51 between career decision-making self-efficacy and the Indecision scale of the CDS, (b) increasing scores on the Indecision scale among three groups categorized as increasingly undecided regarding a college major and a career, and (c) that the Indecision scale made the largest contribution of several variables studied to predicting decisional status regarding both college major and career plans.

The authors of the CDS originally planned to measure "distinctive antecedents of career indecision" (Osipow, Carney, and Barak, 1976). They factor analyzed the 16 items of the Indecision scale and found four factors that reflected lack of structure and confidence, external barriers to preferred choice, approach-approach problems, and personal conflict. Over the years the structure has become an issue because several studies have failed to replicate the original factors, leading Osipow to suggest caution in the use of the factor scores (Osipow, 1987). As Fitzgerald and Rounds (1989) pointed out, the concept of career indecision is believed to be multidimensional, so the fact that the concept can only be measured reliably as one dimension presents conceptual problems. In proposing reasons for this anomaly, Slaney (1988) suggested, in a review of the CDS published in the second edition of this book, that the fault may lie with the compound ideas tapped by some of the items. Shimizu, Vondracek, Schulenberg, and Hostetler (1988) reanalyzed many of the previous studies to show that when appropriate forms of factor analyses are used the results approximate the original factor structure more closely.

OVERALL CRITIQUE

The Indecision scale of the CDS continues to be heavily used in counseling research. The total score has proved to be reliable and valid in a number of ways. If the user is looking for an overall measure of career indecision for use in counseling, evaluation, or research, there is probably no better measure. However, it is clear from the counseling literature that educational and career counselors are attempting to understand various types of indecision. If the CDS is to be used differentially to assess types or sources of indecision, it seems that revising the items so that each one reflects only one idea, and examining the resultant factor structure in a series of well-planned analyses as suggested by Fitzgerald and Rounds (1989) might lead to an even more useful measure.

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Taylor, K. M., & Poma, J. (1990). An examination of the relationships among career decision-making self-efficacy, career salience, locus of control, and vocational indecision. *Journal of Vocational Behavior, 37*, 17–31.

NOTE: Portions of this review were abridged from the author's original review in the *Ninth Mental Measurements Yearbook* with permission of the Buros Institute.

Career Development Inventory (CDI)

Donald E. Super, Albert S. Thompson,
Richard H. Lindeman, Jean P. Jordaan and
Roger A. Myers

Consulting Psychologists Press
3803 East Bayshore Road
Palo Alto, CA 94303

Target Population: High School and College; Grades 8–12 (School Form); Freshmen, Sophomores, Juniors, and Seniors (University Form).

Statement of the Purpose of the Instrument: Used to help students make educational and career plans. For general use as a sound instrument for assessing career development and vocational maturity. It is also useful in evaluating programs and services.

Titles of Subtests, Scales, Scores Provided: 8 scales: Career Planning, Career Exploration, Decision-Making, World of Work, Knowledge of Preferred Occupational Group, Career Development Attitudes, CD Knowledge and Skills, Career Orientation. Scores are reported in Standard Score Form.

Forms and Levels Available, with Dates of Publication/Revision of Each: School Form 1979; College and University Form 1981.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1981 Manual; 1982 Supplement for College and University Form; 1984 Technical Manual.

Languages in Which Available: English.

Actual Test Time: 25 minutes.
Total Administration Time: 30 minutes (instruction).

Norm Group(s) on Which Scores Are Based: 9–12 High School Form; Freshmen, Sophomores, Juniors, and Seniors, College and University Form.

Manner in Which Results Are Reported for Individuals

Types of Scores: Standard Scores reported with scale descriptions and percentiles.

Report Format/Content

Basic Service: Computer Scored profile.

Report Format/Content for Group Summaries

Basic Service: Group Summaries available by request. Contact Information and Research Services Department.

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Scoring

Machine Scoring Service

Cost of basic service per counselee: $4.80 prepaid Answer Sheet.

Time required for scoring and returning: 24 hour turnaround + mail time. Palo Alto; Minneapolis; Washington, DC.

Hand-Scoring: Not available.

Local Machine Scoring: Not available.

Computer Software Options Available: Not available.

Cost of Materials

Specimen Set: Manual, Test Booklet, Answer Sheet (High School and College) $30.00.

Counselee Materials: Reusable Test Booklet; Prepaid Answer Sheet.

Published Reviews:

Hansen, J. C. (1985). Review of the Career Development Inventory. *Measurement and Evaluation in Counseling and Development, 17*(4), 220–224.

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DESCRIPTION

The Career Development Inventory (CDI) has two forms: a School form (S) for use with students in grades 8 through 12 and an analogous (the wording is modified) College and University form (CU) designed for students in higher education. The CDI is intended to assess specific areas of career development and career maturity with 120 multiple choice items. There is no time limit, but the average time to complete the CDI is 65 minutes (Thompson & Lindeman, 1981).

Part I has four basic scales: Career Planning (CP, 20 items), Career Exploration (CE, 20 items), Decision Making (DM, 20 items), and World of Work (WW, 20 items). The remaining 40 items are Part II and form a "knowledge of preferred occupational group" (PO) scale.

The authors combine CP and CE to provide another scale, Career Development—Attitudes (CDA), while DM and WW are combined into a scale of Career Development—Knowledge and Skills (CDK). The four basic scales of Part I combined form a third scale, Career Orientation Total (COT), which approximates an assessment of Super's 1960 concept of career maturity.

The preferred occupational group is chosen by the student after marking occupations of interest in 20 groups of five representative occupations each. For example, the writing and law group is represented by editor, lawyer, librarian, reporter, and script writer. Characteristics of the occupational group, ability requirements, related interests, values, and other needs of the occupational group are covered. For example, the stem "In your preferred Occupational Group one needs" has six options (no specialized training to a postgraduate degree in a special field).

Although the *Manual* states that the CU form was modified for use with college students, this is open to question. Some of the questions have minor changes in the wording to acknowledge different options at the college level, but many of the items (such as career-related values) are identical. Potential users would want to preview the titles and use their own judgment about how appropriate the PO scale is for their students who will take either form of the CDI. Certainly such titles as "parking lot attendant" or "stevedore" are questionable at the college level. On the other hand, several of the occupational groups, such as applied physical science, are represented by titles that all require at least a college degree.

In regards to reading level and vocabulary used, the user's manual considers the CDI-S scales of CP, CE, DM, and WW suitable for grades 8 through 12. The manual cautions that the PO is unlikely to be manageable for students in the tenth grade and younger. The reviewers would expand that caution to include the DM and WW scales.

USE IN COUNSELING

The user's manual for the CDI suggests three primary uses: counseling individuals, planning guidance programs, and evaluating programs and research. Individual counseling with the CDI would be straightforward for the CP and CE scales. Both clearly ask about thoughts and behaviors the student has or has not had. The WW scale is more difficult and students may need help with it. The DM scale uses vignettes and is much more difficult since there are obviously right and wrong answers. Information on the expert judges used to determine the "right" answers would be helpful to the counselor. The PO scale is problematic for younger students in the ninth and tenth grades who may have no work experience at all and little reason to have researched career requirements.

The CDI may also have potential as a stimulus to encourage students to become more actively involved in career planning. Pinkney (1985) pointed out that exploring responses to individual career assessment items can be a productive approach to using career assessment information.

The authors suggest using the CDI as a survey instrument for planning guidance programs. The scoring service would allow a user to get a group report by grade. This provides a comparative picture and starts building local norms for a school or setting. Again, the CP and CE scales appear to have the greatest utility for planning purposes.

Using the CDI for evaluation of programs and research may mean using it in a test-retest sense. In terms of the test-retest reliabilities reported in the technical manual, this is questionable if individual scores are used.

TECHNICAL CONSIDERATIONS

According to the user's manual, for either the CDI-S or the CDI-CU, the norm groups are not a representative national sample of students. Percentile norms for the CDI-S are based on a sample of 5,039 students in grades 9 through 12, but eastern schools were heavily represented. It should be noted that eighth graders were not included in the standardization group, even though the authors suggest using parts of the CDI-S with them.

The percentile norms for the CDI-CU are based on a sample of 1,345 undergraduate students drawn from colleges, universities, and a community college. The user's manual encourages the development of local norms. This is a good idea, especially for groups that are different from the standardized norm groups, and is equally applicable to the CDI-S. The supplement to the user's manual provides information on developing local norms.

Percentile norms are given by grade and sex, but not for minority groups. The authors briefly discuss this issue in the technical manual and note that studies are underway to clarify implications of using the CDI with minority students. They caution the user to be aware that minority (and disadvantaged) students taking the CDI may appear less mature than they really are.

The internal consistencies using Cronbach's alpha coefficients and standard errors of measurement are provided in the manual. There is sufficient reliability in terms of CP (.89), CE (.78), WW (.84), and the combined scales of CPA (.84), CDK (.86), and COT (.85) to be comfortable with those scales. However, caution should be used with the DM (.67) and the PO (.60) scales, even with groups. These two scales are more conceptually complicated and focus on opinions rather than behavior or knowledge. These lower reliabilities for DM and PO were also found with test-retest coefficients over two- and three-week periods. The combined scales of CDA, CDK, and COT have acceptable internal consistencies that range across grades from .79 to .88 with a median of .86.

The user's manual discusses content and construct validity. Content validity was determined by expert judges, but no information about those judges is provided. Potential users would likely benefit from closely reading the items and making their own judgments about the content for their students. No supporting data is provided for content validity, but theory-related information is presented.

A much stronger case is made for construct validity based upon differences in subgroups and on factor structure. There is also support in the literature: both Ward (1982) and Punch and Sheridan (1985) were favorable about the psychometric properties of the CDI. Criterion-related validity is stated to be "the subject of future research."

OVERALL CRITIQUE

The CDI continues to be strengthened as it evolves. The authors report ongoing research with it and earlier reviewers' concerns have been partially addressed. The potential user should be reassured that the claims for using the CDI are reasonable, although two scales (DM and PO) are questionable for use with individual clients. There are some problematic issues the manuals do not address. The following issues would need to be part of the decision to use the CDI.

There are no norms for minority students, and the authors note this as a concern. Minority students may be assessed by the CDI as "false negatives," appearing less mature than they really are. This could be addressed by developing local norms which would require a commitment to the CDI over time. Rural or disadvantaged students would also benefit from local norms in both high school and college settings.

The eight scales of the CDI are uneven in their reliability; which scales are relevant for the user's purpose would be important. The scales also vary in the difficulty of what the student is asked to do. For example, the PO scale is a clever way to focus the student on a single occupational group, but has the weakest credentials. The student responds to what characteristics, abilities, values, and needs are involved in an occupational group. This is more difficult than merely reporting on behavior.

Social desirability with older and bright students may be an issue. Anytime there is an obvious "right" answer some students will choose it over their actual status.

In summary, the CDI is a fair assessment of Super's concept of career maturity (ignoring reality orientation) with growing support from ongoing research. Strengths for the practitioner include the ease of administration and scoring, no time limit so it can be given at one time or in two parts, and a clear statement of how to develop local norms. In addition, practitioners should also feel comfortable with the internal consistencies of the CE, CP, WW, and the combined scales. The DM and PO scales are questionable for individual counseling. Since the standardization samples were not representative, local norms would be important, especially if the CDI was to be used in program planning.

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Career Maturity Inventory (CMI)

John O. Crites

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5460 White Place
Boulder, CO 80303

Target Population: Grades 6–12.

Statement of the Purpose of the Instrument: CMI provides information for individuals and groups on the attitudes and competencies that are important for mature career decision-making.

Titles of Subtests, Scales, Scores Provided: Attitude Scale, Counseling Form B1; Competence Test Form A1; Career Maturity Profile.

Forms and Levels Available, with Dates of Publication/Revision of Each: Competence Test, 1978; Attitude Scale, 1978; Career Maturity Profile, 1978; Administration and Use Manual, 1978; Theory and Research Handbook, 1978; Answer Sheet, 1978.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1978.

Languages in Which Available: English.

Time: Actual Test Time: Attitude Scale 20 minutes; Competence test 5 parts 20 minutes each.
Total Administration Time: Attitude Scale 30 minutes; Competence test, 2 hours.

Norm Group(s) on Which Scores Are Based: Grades 6–12.

Manner in Which Results Are Reported for Individuals

Types of Scores: Raw scores converted to standard scores or percentile rank.

Report Format/Content

Basic Service: Standard scores can be used to compare individual examinees with each other and with their summarized group scores.

Options: Standard scores can also be used in computations which combine or average data.

Report Format/Content for Group Summaries

Basic Service: Percentile norms provide a comparison of examinees with each other and with the summarized group percentiles.

Scoring

Machine Scoring Service

Cost of basic service per counselee: Attitude Scale—$1.34 each, reusable. Competence Test—$2.21 each, reusable. Prepaid Rapid Score Answer Sheets—$3.04 each.

Time required for scoring and returning: 24 hours plus mailing time.

Hand-Scoring

Scored by: counselor.

Time required for scoring: 20 minutes.

Local Machine Scoring: Contact publisher.

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Computer Software Options Available: Contact publisher.

Cost of Materials

Specimen Set: $17.98.

Counselee Materials: Attitude Scale (reusable)—$1.34; Competence Test (reusable)—$2.21; Computer Scoring Answer Sheet—$3.04; Administration and Use Manual (reusable)—$7.15; Theory and Research Handbook (reusable)—$10.05; Hand Scoring Answer Sheet—$.39; Answer Key for Hand Scoring——$1.00; Hand Scoring stencils—$37.40; Hand Scoring Career Maturity Profile—$.30.

Additional Comments of Interest to Users: The CMI "Theory and Research Handbook" is currently being revised to incorporate approximately 2000 studies which have been completed since the last edition was published. This body of research covers the CMI's psychometric properties . . . norms reliability, and validity . . . as well as its use in needs assessment and program evaluation. In addition, longitudinal data on item trends across the high school years are now available. Initial statistical analyses indicate that there is a high degree of similarity between the cross-sectional data gathered in 1978 and the longitudinal findings in follow-up. A research report on these comparisons is forthcoming this summer.

Published Reviews:

Frary, R. B. (1988). Review of the Career Maturity Inventory. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to career assessment instruments* (2nd ed.). Alexandria, VA: National Career Development Association.

Katz, M. R. (1982). Review of the Career Maturity Inventory. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to vocational guidance instruments*. Falls Church, VA: National Vocational Guidance Association.

Charles C. Healy

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University of California, Los Angeles

DESCRIPTION

The Career Maturity Inventory (CMI) measures career choice attitudes and competence of adolescents. It is comprised of both an attitude scale and five competence tests. Its 52-page *Administration and Use Manual* (Crites, 1978a) provides clear guidelines for testing and scoring plus grade-level norms for students in the 6th through 12th grades. The *Research and Theory Handbook* (Crites, 1978b) explains how the instruments were constructed to fit Crites' influential model of adolescent career choice and to detect hypothesized maturation over the seven grade levels it covers. The handbook also includes a summary of research relevant to the instruments through 1976.

The items of the Attitude Scale are diverse statements concerning issues such as the sensibility of obtaining information and making decisions about career choice independently, the potential of finding work satisfying, and one's own progress in career decision making. For example, respondents are asked to agree (T response) or disagrees (F response) with statements such as "work is dull and unpleasant" and "I keep changing my occupational choice." Responses are scored 1 or 0 depending on the keyed answer. Omissions are scored 0.

Crites painstakingly designed and retained items that elicited higher percentages of "mature" responses with each advance in grade level. The keyed responses reflect a positive attitude toward work, the sensibility of planning, and decidedness about one's own career choices. Although the positive viewpoint is the mature one, to be scored mature one almost always chooses F (false) because the work and planning statements are presented from the negative perspective. One wonders if this wording, rather than disagreement with the viewpoint, causes some young students to earn lower scores.

The Competence Test, Form A1, consists of five 20-item, 20-minute tests corresponding to the competences in the Crites' career choice model. Each item is a short narrative followed by a question with one correct answer, three foils, and a "don't know" option. The score is the total correct; "don't knows" are never correct. *Knowing Yourself* yields an estimate of self-appraisal ability based on how often the examinee chooses the best of four inferences about the career potentials of 20 fictitious students. *Knowing About Jobs* gives an estimate of occupational knowledge based on ability to recognize which of four occupations is portrayed in a narrative about a person working. *Choosing A Job* yields an estimate of goal selection competence based on picking the occupation which is most congruent with a fictitious student's experiences and characteristics. *Look Ahead* infers planning ability based upon whether one can identify the best of four sets of steps for entering 20 representative occupations. *What Should They Do* estimates problem-solving competence from ability to pick the best of four solutions for 20 career choice dilemmas. The handbook states the reading level of the items is sixth grade, but there is no indication whether extending the 20-minute test time will lower the reading ability needed.

USE IN COUNSELING

Crites recommends using the Attitude Scale for: "(1) Studying career development, (2) screening for career immaturity, (3) evaluating career education, (4) assessing guidance needs, and (5) testing in career counseling" (Crites, 1978a). By the latter, he means administering the Attitude Scale to identify immature responses so that a client might review the reasons such a response is ineffectual and realize the advantages of the mature response. Since studies cited in the handbook and others reported after its publication indicate Attitude Scale scores relate both to other career maturity measures and to career performances and satisfaction, uses 1, 2, and 3 are well supported. However, since the subscales have limited reliability and have been studied minimally, and since research on Crites' strategy of teaching the mature response has not been reported, uses 4 and 5 should be undertaken only on an experimental basis.

Crites recommends using the Competence Tests in the same way as the Attitude Scale scores. All tests except Knowing About Jobs, however, were untried, albeit logical, approaches to measuring the constructs. Since both the construct validity of the five tests and the contribution of their hypothetical competences to career development still await confirmation, the tests can be used only as experimental measures.

TECHNICAL CONSIDERATIONS

The Attitude Scale has two forms: A2 is a 50-item screening form, and B1 is a 75-item counseling form. Nearly all research on the Attitude Scale is based on form A2 or its predecessor, Form A1. The handbook reports internal consistency reliabilities ranging from .73 to .75 and the test-retest reliability over one year is estimated to be .71 based on a study of Form A1. Since the Attitude Scale has at least five distinct components, its reliability is reasonable. Form B1 consists of 75 items, 28 of which are not scored. The remaining 47 items assess five factors pertaining to career decision making: decisiveness, involvement, independence, orientation, and compromise. The internal consistency coefficients of the 10-item scales range from .62 to .72, whereas the coefficient for the seven-item compromise scale is .50. A bonus for the user of form B1 is that it contains the 50 items of form A2, and consequently one can compute the total Attitude Scale score as well as the five subscale scores.

Studies before and after 1978 tend to support the validity of the Attitude Scale total score as measuring dynamic aspects of career maturity. Research cited in the 1978 handbook confirms that the total score rises with grade level, that it relates positively, but only moderately, to measures of other facets of career maturity, and that it has increased after career education and counseling interventions. Studies after 1978 confirm that the Attitude Scale score differs from competence scores (Alvi & Kahn, 1983; Wallbrown, Selling, & Crites, 1986) and that it assists in accounting for performance and satisfaction in high school work study (Alvi & Kahn, 1983) and in jobs performed during college as well as in college GPA (Crook, Healy, & O'Shea, 1984).

Research on the B1 form's subscales however, has been minimal. While Wallbrown et al. (1986) confirmed their distinctiveness and Fouad and Keeley (1992) related them to work experience ratings, studies have not tested their linkage to distinct deficits or differential responsiveness to particular career development interventions.

For the Competence Test, the subtests have acceptable internal consistency, generally in the .80s for senior high school students and slightly less for younger students. No test-retest reliability data are presented.

Further research on the construct validity of the Competence Tests is needed to fulfill the promise of their careful development. Early studies cited in the handbook confirmed that the tests differed from one another and reflected detectable improvements with advance in grade level. The Wallbrown et al. (1986) analysis of the structure of the CMI scores indicated that the interrelations of the tests are consistent with the hierarchical model of career choice that guided the CMI's development. Additionally, studies cited by Betz (1988) showing that selected CMI subtests relate to other paper-pencil measures of similar design support validity.

However, studies such as that of Westbrook, Sanford, Gilleland, Fleenor, and Merwin (1988) which fail to detect substantial relationships between selected subtests and criteria manifesting the postulated competences highlight the absence of criterion related validity. Other currently available career development tests also lack adequate evidence of criterion validity, but as Betz (1988) warned, the absence of criterion validity may be a fatal flaw for both the concept of career maturity and measures of it.

OVERALL CRITIQUE

The introduction of the CMI in 1973 was groundbreaking, and it has served the profession well over 20 years. Subsequent studies confirm that the Attitude Scale provides information useful in studying adolescents' development, but further research is needed on the Competence Tests. Users deserve a revised handbook incorporating information about 20 years of usage and clarifying matters such as scoring of omissions and the relationship between CMI scores and reading ability.

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Fouad, M. A., & Keeley, T. J. (1992). The relationship between attitudinal and behavioral aspects of career maturity. *Career Development Quarterly*, *40*, 257–271.

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CHAPTER X

Personality Measures

California Psychological Inventory (CPI)

Harrison G. Gough

Consulting Psychologists Press
3803 East Bayshore Road
Palo Alto, CA 94303

Target Population: Ages 14+, reading level is fourth grade. Can be read aloud.

Statement of the Purpose of the Instrument: To assess the kind of everyday characteristics that ordinary people use in their lives to understand, classify, and predict their own and others behavior. Two fundamental aims: (1) to predict what people will say and do in specified contexts; (2) to identify individuals who will be evaluated and described in particular and interpersonally significant ways.

Titles of Subtests, Scales, Scores Provided: 20 Scales (i.e., Dominance, Self Control, Empathy, Psychological mindedness). Utilizes Folk concepts that are easy to understand, ego systemic to respond to and culturally universal.

Forms and Levels Available, with Dates of Publication/Revision of Each: Only form available is the current 462 item test. This is a Level C qualifications instrument available only to Professionals.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1987 Edition of Administrators Guide (Gough or manual); Interpretive Guide 1988 (McAllister); Applications Guide 1992 Edition (Meyer and Davis)

Languages in Which Available: Australian, British, Canadian French, French, German, Italian, Japanese, Spanish, Tagalog, commercial translation.

Time: Actual Test Time: About 45 minutes.
Total Administration Time: About 50 minutes
Hand Score 20 Templates: 1 hour.

Norm Group(s) on Which Scores Are Based: 1,000M 1,000F. High School, College, Adult and several special population.

Manner in Which Results Are Reported for Individuals

Types of Scores: Standard Scores

Report Format/Content

Basic Service: Profile, Narrative and Configural Supplement available.

Report Format/Content for Group Summaries

Basic Service: Available by request.

Scoring

Machine Scoring Service

Cost of basic service per counselee: Profile only = $8.00 each.

Cost of Options: Profile + Narrative $18.00 each. Profile + Narrative + Configural Supplement $25.00 each.

Time required for scoring and returning: 24 hour turnaround + mail time. Scoring centers in Minneapolis; Washington, DC; Palo Alto.

Hand-Scoring

Scored by: clerk; counselor.

Time required for scoring: 60 minutes.

Local Machine Scoring:

Provisions/conditions/equipment required: 640K memory, 80 column printer, DOS 2.0 or greater, IBM PC/IBM-XT/IBM PC-AT or IBM PC compatible. 1/2 sized expansion card slot.

Computer Software Options Available: Five or Ten Year Leases $600–$800.

Cost of Materials

Specimen Set: Test Booklet, Profile Answer Sheet prepaid. Administrator's Guide.

Counselee Materials: Test Booklet (reusable). (Contact publisher—all prices subject to change 1/1/94.)

Published Reviews:

Bolton, B. (1992). Review of the California Psychological Inventory, Revised Edition. In J. J. Kramer & J. C. Conoley (Eds.), *Eleventh mental measurements yearbook.* Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

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DESCRIPTION

The California Psychological Inventory (CPI), originally developed in 1957, is now a well-known and respected instrument for assessing psychological functioning. This most recent version provides 20 scales based on what Gough (1987) calls "folk concepts." Eighteen of these are from the earlier version, and two new ones, Independence and Empathy, have now been added. In addition to these 20 scales based upon folk concepts, there are five special scales. These are: managerial potential, work orientation, leadership potential index, social maturity index, and creative potential index.

Further, the CPI provides three structural scales based upon Gough's cuboidal model of personality. This cube design allows Gough to set up four classes of personality—Alpha, Beta, Gamma, and Delta. The CPI Manual and the accompanying Handbook provide specific descriptions of these various scales and classes of personality, so that users are provided numerous choices of systems for organizing and interpreting the plethora of data generated on the CPI profile.

The inventory is intended for use with adults above the age of 14, and can be self-administered or administered in a group. Scoring can be done by hand or by computer, and several options for scoring and reporting results are offered by the publishers. Because few changes have been made in items or inventory structure since the earlier edition, data on validity, reliability, and norms developed on the earlier version still pertain. The CPI consists of 462 items, of which 194 came from the Minnesota Multiphasic Personality Inventory; they are set in a true-false format and are answered on a separate answer sheet. The following is an example of the items: "I always try to consider the other person's feelings before I do something."

The profile presents results in standard score form with a mean of 50 and a standard deviation of 10. There is common directionality on all scales except F/M (feminine/masculine), so that high scores across scales are associated with more favorable status and low scores with less favorable status. The CPI manual presents an extensive discussion of the theoretical bases for the folk concepts and the vectors underlying the cuboidal model, as well as normative data and summaries of validity and reliability data.

USE IN COUNSELING

Attitudes among career counselors concerning the benefits of utilizing personality measures as a part of the counseling process are probably widely divergent. These may range from "personality is everything in career planning" to "all career decisions should be based primarily upon interest and aptitude data." It has been the experience of some counselors that using personality data with scale names such as "mania" or "paranoia" can be worrisome to some clients, and devastating to others. Among the attractive features of the CPI are the scale titles, which are based upon folk concepts rather than clinical diagnostic terminology. Thus, the CPI may be quite useful for the career counselor who views personality inventory data as potentially useful, although perhaps not essential to the counseling process. The CPI scores may aid a client in acquiring a sharper self-image possibly related to career decision making. Low self-esteem clients might well be assisted to view their abilities in a more positive light or to approach career decision-making with more confidence when favorable personality data are discussed. In general, wise use of the CPI in career counseling should aid in client self-understanding and self-acceptance.

Counselors searching for a conceptual link with other well known career counseling tools might intuitively place Gough's Alpha, Beta, Gamma, and Delta types in juxtaposition with Holland's RIASEC system. One example of such linkage might be as follows:

Alpha (E,S) Holland: enterprising dependable, and outgoing	Beta (C) Holland: reserved, responsible and moderate
Gamma (A) Holland: adventurous, restless, and pleasure-seeking	Delta (I,R) Holland: withdrawn, private, and somewhat disaffected

To a large extent, the usefulness of the CPI in career counseling is limited by how effectively clients process the vast amount of information which appears on their profiles. Counselors may wish to consider the advisability of summarizing and simplifying the CPI score data rather than sharing the profile immediately with the client. Client distortion of the data, or confusion by the data, might be minimized by using the four major classes of scales as proposed in *A Practical Guide to CPI Interpretation* (McAllister, 1988), which accompanies the manual. These classes tend to condense and simplify the meaning associated with a full interpretation of the 20 folk concept scales.

The evaluative aspects of CPI scores may be troublesome to clients when these scores fall in the very low range, but at the same time they provide a useful clinical screen. In the case of clients who score consistently very low on the CPI scales, career counselors may be alerted to the need for referral to psychotherapy. In such a case, the career counselor might need to say something such as: "I wonder if there arent a number of personal or social issues which are reflected in these low scores? Have you given any thought to psychotherapy as a means of working on these issues?" Thus, the door is opened to a possible referral of the client to a psychotherapist or counselor who specializes in this type of assistance. In any case, the career counselor using the CPI must be prepared to deal with client reactions to extremely high or low scores on individual scales, folk concepts notwithstanding. An obvious advantage of the CPI over some other personality inventories is the fact that scale names are not readily associated with psychoses or socially negative diagnostics. A scale name such as "self-control" may contribute to some worry when a very low score appears, but clients are still likely to find it more palatable than an outlying score on a scale named "paranoia."

TECHNICAL CONSIDERATIONS

First introduced in 1957, the CPI has a psychometric history and research/counseling base that exceeds 20 years. Originally constructed by Gough as a "normal" MMPI, it has fulfilled its promise as a measure of *folk concepts* of personality. It includes a wide range of scales which assess such common parlance dispositions and behavioral orientations as "Dominance" and "Good Impression," as well as "Social Presence" and "Socialization." Two scales, Independence (Class I) and Empathy (Class II), have been added to the 1987 Revision to survey most of the ways in which "folk concepts" of personality are defined. It is hard to imagine a more comprehensive assessment instrument than the CPI to reflect everyday constructs of nonintellective and intellective behaviors and attitudes.

Moreover, Gough has assiduously and persistently collected and reported data on CPI norms, reliability, and validity. The career counselor using the CPI can have confidence in its psychometric characteristics. Also, with the 1987 Edition, a conceptual schema developed by Gough from largely factor analytic studies, allows summarization of the 20 CPI scales into essentially four personality "types," with levels of Realization for each. The "cuboidal" model which Gough proposes, as empirically sound as it is, is somewhat esoteric and difficult to translate into career counseling discourse. To tell clients that they are Alpha, Betas, Deltas, or Gammas with certain "cathexes" (profile report) is not very meaningful, even though the research on the CPI documents these interpretations. Some linguistic bridge needs to be developed to communicate to a career counseling client the import of the CPI results.

The newly developed *special scales*, for example, "Managerial Potential" and "Creative Potential," are much more easily understood by clients. They are "folk concepts" of personality which are more readily incorporated into the career decisional processes of clients. So too, are the "2-scale" and adjectival patterns delineated in *A Practical Guide to CPI Interpretation* (McAllister, 1988). Although it contains a store house of data on combinations of CPI scales (two at a time), this guide presumes a background and expertise in the CPI, which is based upon its research and development, as well as its use in career counseling.

COMPUTER-BASED INTERPRETATION

No administration of the CPI is available on the computer; however, there are three computer-generated reports for use by the career counselor. First, there is a *profile* report which presents the client's scores on the cuboidal model, plotting them on the 2-dimensions of "internality vs. externality" and "norm-favoring vs. norm-doubting." A short paragraph describes the client's positions on these axes, as well as level of realization of the dominant type (Alpha, Beta, Gamma, or Delta). Also included is the standard profile of scores on the 20 CPI scales and a statistical summary. Second, there is a more extended *narrative* report (approximately 12 pages) which goes into considerably more descriptive and explanatory detail. It starts with a "Reliability Check" of the protocol and then proceeds to sections on Classification in Regard to Type and Level, Comments on the Profile of Folk Concepts Scales, Special Purpose Scales and Indices, and A Fully Individuated Reading of the Protocol. Third, there is a *configural analysis supplement* of two or more CPI scales designed to combine data from individual high and low scores with differentiating adjectival characteristics. These descriptive summaries are very helpful for the counselor to clarify for the client the question *Who am I?*. How these statements translate into career decision-making is part of the process of effective career counseling.

Two considerations which are relevant to all three of these reports are: (a) What if a client scores at the *intersect* of the two dimensions of the cuboidal model? Which type is that client? (b) What are *all* the profile characteristics of a client? Each profile has three parameters: elevation, shape, and scatter. An explanation of these profile characteristics, and how they relate to the CPI, should be part of the reports and discussed in the *CPI Administrator's Guide*.

OVERALL CRITIQUE

As mentioned previously, the CPI has been in use for many years and there is now a large and respectable body of data pertaining to validity and reliability. Unfortunately, for career counselors, there are few if any empirical connections between CPI personality scales and occupational choice or career success. Thus, the need for personality measures that are truly job related continues to be largely unmet by the CPI. This is more of a criticism of research activities of CPI users than an inherent flaw in the instrument itself.

For all of the richness of data generated by the CPI, some better system for combining and simplifying scores needs to be a feature in the manual. Granted that test interpretation practices are governed by the level of experience and training of the counselor, clearer and simpler guidelines for use of the inventory data are needed. Much of the theoretical discussion in the manual misses the mark for the average, practicing career counselor.

Finally, the extent of overlap among the 20 scales as shown in several factor analytic reports should be addressed in a manner which will support the simplification and summarization of the scores now reported on the 20 scales. This should then provide empirical support for the guidelines mentioned above.

All in all, the CPI is a very good instrument, thoughtfully organized, and potentially a valuable tool for career counselors.

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McAllister, L.W. (1988). *A practical guide to CPI interpretation*. Palo Alto, CA: Consulting Psychologists Press.

Myers-Briggs Type Indicator® (MBTI®)

Isabel Briggs Myers and Katharine C. Briggs

Consulting Psychologists Press
3803 East Bayshore Road, P.O. Box 10096
Palo Alto, CA 94303

Target Population: The MBTI is used in business and industry, counseling, education, and other settings. It is used by a wide age group: high school students through adults.

Statement of the Purpose of the Instrument: The Myers-Briggs Type Indicator® (MBTI®) instrument enables people to communicate and work together more effectively through understanding individual differences. It's used in business and education for career counseling, team building, conflict resolution and management development.

Titles of Subtests, Scales, Scores Provided: Scales reported are: Extraversion—Introversion, Sensing—Intuition, Thinking—Feeling, Judging—Perceiving.

Forms and Levels Available, with Dates of Publication/Revision of Each: MBTI Form G (126 items) 1977; MBTI Form G Self-scorable Revised (94 items) 1993; MBTI Form K (131 items) 1990; MBTI Form J (290 items) 1984.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: *Manual: A Guide to the Development and Use of the Myers-Briggs Type Indicator (1985)*; *Introduction to Type, 5th Ed. (1993)*; *Introduction to Type in Organizations, 2nd Ed. (1990)*; *Introduction to Type and Careers (1992)*; Expanded Analysis Report Manual (1984); Expanded Analysis Report Interpretative Guide (1992); Type Differentiation Indicator Manual (1987); *MBTI Career Manual (1992)*.

Languages in Which Available: Spanish, French, Italian, German, Arabic, Chinese, Finnish, Greek, Hungarian, Norwegian, Indonesian, Japanese, Korean, Portuguese, Russian, Vietnamese, Swedish, Turkish, Thai, Danish, Tagalog, Dutch, Bahasa Malaysian, Afrikaan, Chinese-Mandarin, Chinese-Cantonese.

Time: Actual Test Time: Takes 20–30 minutes.
Total Administration Time: Self-administering.

Norm Group(s) on Which Scores Are Based: Sixteen personality types based on the work of Carl Jung, elaborated on by Myers and Briggs.

Manner in Which Results Are Reported for Individuals

Types of Scores: Full scale results, preference scores, descriptions of clients' types, full interpretation of the MBTI Profile to assist counselors in presenting the results.

Report Format/Content for Group Summaries

Basic Service: Data are presented in graphs and tables. Group reports can be generated from a group of answer sheets, from data sent in by customers on disks and scored by CPP and in some cases from previously scored answer sheets. The MBTI Group Report provides an understanding of the MBTI type, orientation, and type balance of a group. It can be used for team building as well as for group presentations for industry or academia.

Options: Database service for storage of your scoring data, a service for researchers, businesses and institutions requesting aggregate information about test items or scores, and group and individual reporting of the information in your database.

Scoring

Machine Scoring Service

Cost of basic service per counselee: For nonprepaid answer sheets, processed within 24 hours, rates are determined by the numbers mailed each time as follows: 1 sheet—$8.00/each, 2–9 sheets—$7.00/each, 10 or more sheets—$60.00/each.

Cost of Options: You may request express return of your reports by an expedited shipping service at an additional charge.

Time required for scoring and returning: Two business days from our receipt or we will express ship the reports at no additional charge.

Hand-Scoring

Scored by: counselee; counselor.

Time required for scoring: Self-scorable forms offer instant scoring and interpretations.

Local Machine Scoring:

Provisions/conditions/equipment required: Hardware requirements for software systems users: an IBM PC, IBM-XT, PC-AT, or IBM compatible PC, a hard drive, a DOS 2.0 or greater, 640K of memory, an empty full- or half-sized expansion card slot. May also need other ports if using an optical scanner.

Computer Software Options Available: Standard administration on-line. Other: Scanner entry, interactive computer administration, or key-in manual entry.

Ways in which computer version differs: The system offers the option of taking the MBTI on-screen or having results scanned into the computer. It also offers an on-screen tutorial for administering the MBTI, separate disks for complete data security, and multiple-site testing and single-site scoring via duplicated disks.

Cost of Materials

Specimen Set: MBTI Profile Report Sampler: $8.00, Expanded Analysis Report Sampler: $30.00.

Counselee Materials: MBTI Manual, Form G Test Booklets, Form G Prepaid Profile Answer sheets, TDI Form J Test Booklets, Form G Self-Scorable Test Booklets (reusable), MBTI Type Booklets (Sixteen individual booklets). (Contact publisher for current prices.)

Additional Comments of Interest to Users: Now available: The MBTI Narrative Report for Organizations, an individual report for use with Introduction to Type in Organizations, and the MBTI Team Building Program, a complete program for professionals who want to apply the MBTI in team building (includes Leader's Resource Guide & Team Member's Guide).

Published Reviews:

Carlson, J. G. (1985). Recent assessments of the Myers-Briggs Type Indicator®. *Journal of Personality Assessment, 49*, 356–365.

Carskadon, T. G. (1987). Introduction to type in organizational settings: A review. *Journal of Psychological Type, 13*, 73.

Devito, A. J. (1985). Review of the Myers-Briggs Type Indicator. In J. V. Mitchell (Ed.), *Ninth mental measurements yearbook, Vol. II* (pp. 1030–1032). Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

Tzeng, D., Ware, R., Outcalet, D., & Boyers, S. (1985). Assessment of the Myers-Briggs Type Indicator® items. *Psychological Documents, 15*(2), 17–18.

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Reviewed By

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DESCRIPTION

The Myers-Briggs Type Indicator (MBTI) is one of the most frequently used measures of personality, for at least two reasons. First, unlike many personality measures, the MBTI focuses on *normal* variations in personality, and because more people have normal as against abnormal personality, the measure may be useful with a larger number of clients. Second, many counselors find that the MBTI has enormous "face validity" for clients, that is, that clients understand the concepts implicit in the measure, tend to agree with important aspects of type characterizations, and find the information useful and free of value judgments and thus non-threatening.

McCaulley (1990) provides a concise and informed overview of the MBTI, its history and its uses. The forms of the MBTI were developed over at least four decades. Initial work was done by Katherine C. Briggs and her daughter, Isabel Briggs Myers. Mary H. McCaulley also made numerous contributions, and worked closely with Isabel in projects such as the writing of the comprehensive (though increasingly dated) MBTI manual (Myers & McCaulley, 1985), which was published subsequent to Myers' death in May, 1980. McCaulley is President of the non-profit Center for the Assessment of Psychological Type, which also distributes the MBTI and numerous training and intervention materials.

The MBTI was developed with some grounding in the basic precepts of Carl G. Jung's theory of psychological functions and types. The theory, which must be understood to make the best use of the MBTI, presumes that "... much of the seemingly random variation in behavior is actually quite orderly and consistent, being due to basic differences in the way individuals prefer to use their perception and judgment" (Myers & McCaulley, 1985, p. 1).

The test is designed to measure four dimensions: *E*xtraversion- *I*ntroversion, *S*ensation-I*N*tuition, *T*hinking-*F*eeling, and *J*udgment-*P*erception. In conventional usage, scores are computed on each dimension for each preference of the dimension (e.g., *E*xtraversion versus I*N*troversion), and are then dichotomized according to which orientation is preferred. Each individual is then classified into one of the 16 types formed from all possible combinations of the four scales, for example, ENTJ, ISTP, and ENFP.

The items are forced-choice in nature and consist of paired statements, one from either preference on one of the four scales. The MBTI was designed for older adolescents and adults in the normal population, but can be given as low as fourth grade provided the clients are at roughly an eighth-grade reading level. The MBTI can be administered in either a group or individual situation and is essentially self-administered. Although the administration is not timed, most persons complete the measure in roughly 30 minutes. Computerized scoring services are available at an additional cost and provide scores and an interpretative report of results.

USES IN COUNSELING

Administration of the MBTI is not complicated or difficult, and scoring, even by hand using templates or the self-scorable form, is straight-forward. However, reporting results to test takers is not as routine. As with any psychological measure, the counselor must remember that MBTI scores provide only a thumbprint sketch of the examinee's personality type. Therefore, score interpretation requires some experience and training. The utility of this measure lies primarily in providing an appealing framework for discussion with clients of personality types, and of the client's own thinking about personality and preferences.

The 1985 *Manual* is the second edition, and includes a chapter on uses of the measure in counseling. One reason why the MBTI is so popular is that counselors have identified many ways to use the measure.

An especially popular use of the measure has been in career counseling. Over many years the MBTI data bank has cumulated to considerably more than one-quarter million test profiles. These have allowed the creation of impressive career atlases cataloguing the type profiles of people within various careers. For example, McCaulley (1990, pp. 190–193) presents a type table for counselors. A Career Report scoring can be requested that presents various information, including the 50 most popular and the 25 least popular occupations for the client's type. This kind of information can be very useful in exploring the career options that clients might wish to pursue.

Of course, the type tables for careers are only used as a framework to explore matches of a client's type with the profile for an occupation. Clients can do well in careers for which their types are atypical or unusual. The SN preferences seem to be most related to typical choices of occupations, while EI preferences seem to be most related to choice of work settings (Myers & McCaulley, 1985, p. 77).

TECHNICAL CONSIDERATIONS

As suggested by the previous discussion, the norming samples for this measure are most impressive. We also concur in the view of the *Manual* offered by Willis and Ham (1988, p. 232) in the previous edition of this book, when they noted that "the MBTI Manual is among the top two or three [manuals] currently available for use."

In reviewing the psychometric properties of the measure, we emphasize our view that it is incorrect to speak of a test being reliable or valid. Rather, these are properties of *scores* on a test (Thompson, 1992). Still, evidence from previous psychometric studies of the measure are useful in drawing tentative conclusions about the conditions under which MBTI scores might be useful to counselors.

The internal consistency of *continuous scores*, in terms of split-half reliability with the Spearman-Brown prophesy formula correction, are reported in the *Manual* for Forms F and G. The analyses were performed on diverse subsamples of the MBTI data bank, across variations such as gender, educational levels, and age groupings. The coefficients ranged from .43 to .88 for EI, .34 to .91 for SN, .00 to .88 for TF, and .28 to .92 for JP. The majority of the reliability coefficients were in the .80s.

The internal consistency of *type category scores* were calculated in various ways. The average reliability coefficients were comparable for continuous and type scores.

Test-retest reliability for *continuous scores* using Pearson product-moment correlation coefficients ranged from .51 to .93 for EI, .58 to .91 for SN, .45 to .91 for TF, and .45 to .89 for JP. Scores on the TF scale most often had the lowest reliability and scores on the JP scale most often the highest. Test-retest reliabilities for *type category scores*, that is, agreement of type from one test to the next, tended to be higher.

The construct validity of the MBTI has been studied in several ways. The theoretical basis for the MBTI is supported by type distributions for different professions that agree with descriptions based on Jung's theory. The *Manual* also presents correlations between MBTI scores and scores on over 25 other psychometric tests including personality tests, interest inventories, vocational and educational tests, and other measures of Jungian theory. Sample sizes range from 65 to 1,218 and the majority of correlation coefficients reported were between .20 and .45.

A pair of studies reported in the *Manual* by Carskadon used self-estimate of type as a validity measure. When clients were selected to choose the type description that best suited them, their tested types were chosen to a statistically significant degree more often than chance level in both studies. Factor analytic studies also provide support for construct validity (e.g., Thompson & Borrello, 1986). Less supportive findings are reported in Carlson (1985).

Predictive validity is reported for the relationship between the MBTI scores and a variety of other variables. These studies have included predictions of cognitive abilities, affective characteristics, interpersonal abilities, time orientation, fantasy and imagery, privacy, optimism and pessimism, anxiety, and cross-cultural issues. While types of validity evidence are sufficiently addressed, criterion-related and discriminant validity are not as well represented in the literature.

OVERALL CRITIQUE

The MBTI has not been without critics, and debates over the measure's merits have appeared, for example, in a 1989 issue of *Journal of Counseling and Development* and in a 1991 issue of *Measurement and Evaluation in Counseling and Development*. Three criticisms are summarized here.

First, some (Wiggins, 1989) criticize the dichotomous scoring of the MBTI scales, although dichotomous scoring is strongly recommended by the test's authors. Critics note that dichotomizing scores discards score variance and consequently may make scores less reliable. However, MBTI advocates counterargue their view that people have distinct preferences represented in types based on dichotomization, and that clients usually seem to be comfortable working with a model of types.

Second, it has been noted that clients can often pick their types when the types are described to them. This face validity of MBTI scores is a two-edged sword. On the one hand, it is comforting that clients often react "that's me" when their scores are interpreted. On the other hand, what is the utility of a measure that yields insights that can often be obtained without using the measure at all? Of course, as with most psychological measures, value inures not to the scores *per se*, but rather to the framework for exploration that the measure provides.

Third, it has been noted that the MBTI is not grounded in all respects in Jung's theory. For example, MBTI developers conceptualized the JP scale as a necessity to operationalize the concepts of dominant (first-preferred), auxiliary (second most-preferred), tertiary and least-preferred functions, associated with intraindividually ordered preferences for the S, N, T and F functions. Although the MBTI extends or fleshes out Jungian theory in some respects, the linkage between the measure and the theory is clearly intimate and considered.

The MBTI is a useful measure of normal variations in personality. The information collected from using the measure over several decades is impressive, though more empirical work always remains to be done. However, as with most psychological measures, the utility of the measure is ultimately a function of the counselor's thoughtfulness in using scores to assist the client in exploring and understanding self and others.

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Thompson, B., & Borrello, G. M. (1986). Second-order factor structure of the MBTI: A construct validity assessment. *Measurement and Evaluation in Counseling and Development, 18*, 148–153.

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Occupational Stress Inventory (OSI)

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Target Population: Adult workers.

Statement of the Purpose of the Instrument: A concise measure of three dimensions or domains of occupational adjustment: occupational stress, psychological strain, and coping resources. The OSI can be used to help individuals develop good coping skills for dealing with stress, and for measuring outcomes and determining the effectiveness of stress reduction treatment interventions.

Titles of Subtests, Scales, Scores Provided: The OSI contains three separate questionnaires. The Occupational Roles Questionnaire (ORQ) measures occupational stress and contains these six scales: Role Overload, Role Insufficiency, Role Ambiguity, Role Boundary, Responsibility, Physical Environment. The Personal Strain Questionnaire (PSQ) measures psychological strain and contains these four scales: Vocational Strain, Psychological Strain, Interpersonal Strain, Physical Strain. The Personal Resources Questionnaire (PRQ) measures coping resources and contains these four scales: Recreation, Self-care, Social Support, Rational Cognitive coping. Raw and standard scores (T-scores, percentiles) are given for each of the 14 scales.

Forms and Levels Available, with Dates of Publication/Revision of Each: Research Version (1987).

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: Occupational Stress Inventory Manual (Research Version)—1987.

Languages in Which Available: English.

Time: Actual Test Time: 20–40 minutes.
Total Administration Time: 1 hour.

Norm Group(s) on Which Scores Are Based: 909 adults employed primarily in technical, professional, and managerial positions in schools, service organizations, and manufacturing settings. (M age = 44; 48.8% male; 60% married).

Manner in Which Results Are Reported for Individuals

Types of Scores: T-scores, percentiles reported separately for men and women.

Report Format/Content

Basic Service: Profile forms (T-scores); interpretive statements for high scores on each scale are presented in manual (Table 1). Interpretive guidelines for other score ranges also presented in manual (see p. 5).

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service

Cost of basic service per counselee: About $12.00 (volume discount available)

Time required for scoring and returning: 24 hours.

Hand-Scoring

Scored by: clerk; counselor.

Time required for scoring: About 15–20 minutes.

Local Machine Scoring:

Computer Software Options Available: Computerized adaptive administration; Computer version (software) requires 256K and two disk drives—one may be a hard disk; Standard administration on-line. Can administer, score, and interpret or just score and interpret.

Ways in which computer version differs: Provides separate reports for professional and client. Professional report (5–8 pages) contains interpretive summary and detailed analysis of OSI scales. Client report (8–12 pages) reviews OSI scales and provides feedback on scores with suggestions for reducing stress, relieving strain, and coping skills. See attached samples> (Two reports produced using the mail-in scoring service and the computer version).

Cost of Materials

Specimen Set: Basic Kit—$66.00 (includes manual, 25 reusable item booklets, 50 rating sheets, 50 profile forms). Manual alone is $10.00.

Counselee Materials: Reusable item booklet (pkg/25)—$30.00. Rating sheets (pkg/50)—$18.00. Profile Forms (pkg/50)—$12.00. Pre-paid main-in answer sheets (pkg/5)—$60.00 (5 + pkgs—$55.00). Computer Version software (25 uses)—$295.00 (repeat customers may purchase additional administrations at a reduced cost).

Additional Comments of Interest to Users: Revision (including additional scales, case studies, and expanded norms)—1994. We also have plans to develop and make available materials for workshops.

Published Reviews:

Cochran, L. (1992) Review of the Occupational Stress Inventory. In J. J. Kramer & J. C. Conoley (Eds.), *Eleventh mental measurements yearbook.* Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

Powell, T. E. (1991) Review of the Occupational Stress Inventory. *Measurement and Evaluation in Counseling and Development, 24,* 127–130.

Reviewed By

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DESCRIPTION

The Occupational Stress Inventory, Research Version (OSI), is designed for use with employed persons with at least a seventh grade reading level. The OSI was derived from an interactional model of job-related stress which integrates stimulus-based and response-based models of stress (Richard & Krieshok, 1989). The interactional model posits the interaction of stress from the environment with coping responses of the individual. This interaction of stress and coping results in some level of strain perceived by the individual. Specifically, the model predicts that for a given level of experienced stress, perceived strain will be lower for those individuals with more coping resources. A higher level of strain is predicted for those individuals with fewer coping resources.

The OSI is divided into three sections which measure occupational stress, perceived strain, and coping resources, respectively. Perceived occupational stress is measured by the Occupational Roles Questionnaire (ORQ). The ORQ is comprised of six sub-scales including Role Overload, Role Insufficiency, Role Ambiguity, Role Boundary, Responsibility, and Physical Environment. The respondent's level of perceived strain is measured by the Personal Strain Questionnaire (PSQ). The PSQ is comprised of four sub-scales including Vocational Strain, Psychological Strain, Interpersonal Strain, and Physical Strain. The respondent's level of coping resources is measured by the Personal Resources Questionnaire (PRQ). The PRQ is comprised of four sub-scales including Recreation, Self-Care, Social Support, and Rational/Cognitive coping. The authors report that these fourteen facets of stress, strain, and coping were identified and defined "with reference to the literature and consultation with colleagues" (p. 8).

The OSI has 140 items (10 items per sub-scale) contained in one test booklet. Items for the three major scales (stress, strain, and coping) appear on separate pages and are treated as separate questionnaires. Items were written based on the definitions of the 14 facets of stress, strain and coping. For example, "The priorities of my job are clear to me" is an item on the Role Ambiguity sub-scale of the ORQ. Other examples include, "I am bored with my work" which appears on the Psychological Strain sub-scale of the PSQ, and "When I need a vacation I take one" which appears on the Recreation sub-scale of the PRQ. Items are rated on a five-point Likert-type scale which requires the respondent to estimate the frequency with which the item applies to his/her situation (rarely or never, occasionally, often, usually, most of the time). The OSI can be completed in 20–40 minutes and the presence of an administrator is not required.

The OSI is easily scored by removing the top page of the answer sheet to reveal the scale weight (1–5) which corresponds with the respondent's answer. Raw sub-scale scores can be determined by summing the relevant items on the hand-scorable form. These scores can then be transferred to the profile sheet which provides a visual profile of raw scores as well as corresponding T-scores. The scores were derived so that higher scores indicate higher levels of the relevant construct (e.g., higher stress, strain, or coping).

USE IN COUNSELING

The authors propose five main uses for the OSI: (1) as a screening instrument, (2) as a tool for assessing the organizational milieu, (3) as a diagnostic instrument for counseling, education, and development, (4) as a tool for career counseling, and (5) as an intervention measure. The OSI is a unique instrument for serving the above purposes. It is the only published instrument which assesses stress, strain and coping, the three major components of the interactional model. As such, it promises to be a useful tool for counselors and researchers interested in job-related stress.

However, two related concerns remain before the utility of the OSI can be fully realized. The first concern involves psychometric aspects of the OSI including sub-scale reliability and factor structure. The second related concern is the requirement for additional evidence of the construct validity of the authors' proposed model of stress, strain, and coping. Both concerns are acknowledged by the authors who state, "Once the psychometric properties of the OSI scales have been fully examined, and a substantial degree of construct validity is hopefully established, some important applications will become possible. . ." (Osipow & Spokane, 1987, p. 18). While there exists some empirical support for the validity of the OSI scales and the interactional model, further research and refinement of the scales seems warranted.

TECHNICAL CONSIDERATIONS

The authors present normative data "from a sample of 909 adult subjects employed in primarily technical, professional, and managerial positions . . ." which were collected by various researchers and practitioners and compiled into a single normative data bank. The limited information about the various samples which constitute the compiled data bank precludes defining the population that the norms are intended to represent. The authors suggest that local norms be developed unless the research norms unquestionably apply to the population of interest.

The OSI scales and the majority of the sub-scales have demonstrated adequate internal consistency reliability. Reported Cronbach's alpha coefficients for total questionnaire scores ranged from .89 to .99 and for the sub-scales from .71 to .94 . Several sub-scales (Responsibility, Vocational Strain, Recreation, and Self-Care) should be interpreted with caution because of low alpha coefficients and weak factor analytic results (Powell, 1991). No test-retest reliability information is reported for the present version of the OSI although the authors report test-retest results for the earlier version, form E-1, ranging from .88 to .94 for scale scores and .56 to .94 for sub-scale scores.

The manual reports results from a variety of research studies which provide moderate to strong support for the validity of the OSI. The weakest results come from factor analytic studies which provide only partial support for the hypothesized structures of the ORQ, PSQ, and PRQ. While the overall factor structure of the three scales were partially confirmed, some discrepancies were noted. Specifically, the PSQ and PRQ each produced five factors although their theoretical structure predicts only four. In addition, the individual item loadings did not provide strong confirmation for the hypothesized structure of the sub-scales. The authors present other data in the manual which provide stronger support for the validity of the OSI. Specifically, they present the results of several studies which investigated the relationship of the scales and sub-scales of the OSI to various work-related variables such as non-productive behavior, absenteeism, job satisfaction, and burnout. The studies found, for the most part, that the OSI scales correlated significantly with the variables with which they should theoretically be linked. These results provide moderate support for the validity of the OSI and its constructs. Results from treatment studies are also presented in the manual. The studies provide support for the validity of the OSI and the interactive model of stress by confirming the hypothesized changes in the measures of stress, strain, and coping precipitated by "stress reduction" courses. The authors cite Smith (1987) who found that a stress self-help program resulted in significant reductions in experienced strain, increases in coping resources, but no change in perceived stress. These results were predicted by the model and thus provide additional support for the OSI and the interactive stress model.

OVERALL CRITIQUE

The OSI is a timely and potentially useful instrument. As the authors suggest, the instrument offers important applications in the understanding and treatment of occupational stress. Several cautions seem warranted if the OSI is to be used for counseling purposes. The first concerns the interpretation of the subscales. Low alpha coefficients and weak factor analytic results for some subscales precludes unambiguous interpretation of their results. Care should be taken to explain these limitations to the client especially in the areas of personal and career counseling. A second caution concerns the theoretical underpinnings of the OSI. The OSI was carefully developed based on the theory that strain is a result of the interaction of stress and coping resources. While the authors have carefully developed their instrument based on this theory and have sought to provide empirical support for it, more research is needed. Finally, improved normative data is needed to facilitate interpretation of OSI scores.

The well-written manual makes these cautions clear. The counselor who keeps these concerns in mind may confidently use the OSI as a tool to assist in understanding occupational stress. The OSI is well grounded in theory, has sufficiently strong psychometric support, and seems practical in terms of administration requirements. The authors are to be commended for the effort invested in the development of the OSI and their attempt to gather abundant psychometric information for the accompanying manual.

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NOTE: Portions of this review were abridged from the author's original review in *Measurement and Evaluation in Counseling and Development,* 1991, *24*(3), with permission of the Association for Assessment in Counseling.

Personality Research Form (PRF)

Douglas N. Jackson

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1110 Military Street, P.O. Box 610984
Port Huron, MI 48061-0984

Target Population: Adolescents, Adults (age 11—grade 7 and up).

Statement of the Purpose of the Instrument: The PRF was designed as a broad-band measure of personality functioning in the normal range, assessing the Variables of Personality first defined by Henry A. Murray. It has been applied in a wide variety of context including personality research (where it is one of the two most widely cited profile measures of personality in the normal range), vocational counseling, personnel selection, clinical assessment, and in sports psychology, as well as in other areas. The scale names and scale definitions are such as to be relatively well understood by respondents, so that it is possible to return results to respondents as an aid in self-understanding.

Titles of Subtests, Scales, Scores Provided: Scales: Abasement, Achievement, Affiliation, Aggression, Autonomy, Change, Cognitive Structure, Dependence, Dominance, Endurance, Exhibition, Harm avoidance, Impulsivity, Nurturance, Order, Play, Sentience, Social Recognition, Succorance, Understanding, Infrequency, Desirability.

Forms and Levels Available, with Dates of Publication/Revision of Each: PRF AA and BB parallel forms comprising 440 items and 22 scales each, 1967. Forms A and B parallel forms of 300 items and 15 scales; Form E.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1984

Languages in Which Available: English, French, and Spanish.

Time: Actual Test Time: 40 minutes (form E).
Total Administration Time: 45 minutes.

Norm Group(s) on Which Scores Are Based: University Students, High School, Adults.

Manner in Which Results Are Reported for Individuals

Types of Scores: The scores are reported on a profile expressed in terms standard (T) scores. These may be converted to percentile ranks using tables in the manual.

Report Format/Content

Basic Service: The PRF Basic Report consists of profiles for the 20 PRF scales and the eight personality-based work styles.

Options: The PRF Extended Report includes profiles for the Form E Personality scales as well as eight Vocational Preference scales. Administrative indices and an interpretive paragraph making use of the Infrequency and Desirability scale results are useful in determining the validity of the PRF administration.

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service

Cost of basic service per counselee: $3.80 each for 20 or fewer with volume prices as low as $3.00 for 110 or more.

Cost of Options: $7.60 each for 20 or fewer with volume prices as low as $4.90 for 110 or more.

Time required for scoring and returning: 48 hours processing time plus mailing time.

Hand-Scoring

Scored by: counselee; clerk; counselor.

Time required for scoring: 10 minutes.

Local Machine Scoring:

Provisions/conditions/equipment required: Scoring available using Scantron and NCS equipment with software supplied by the publisher.

Computer Software Options Available: Standard administration on-line.

Ways in which computer version differs: No difference.

Cost of Materials

Specimen Set: Examination Kit $45.50.

Counselee Materials: Manual—$19.50; Reusable Test Booklets (pkg/25)—$25.25; Hand Scorable Answer Sheets (pkg/25)—$6.50–$9.50; Profile Sheets (pkg/25)—$6.50–$9.50; Scoring Template (reusable)—$9.50; Annotated Bibliography—$25.00; Cassette Tape (for audio presentation)—$21.00; SigmaSoft Full Package 25 scorings—$160.00.

Additional Comments of Interest to Users: A bibliography of research studies compiled by Richard N. MacLennan containing annotations of over 600 articles and reviews is available from the publisher.

Published Reviews:

Hogan, R. (1989). Review of Personality Research Form, (3rd ed.). In J. C. Conoley & M. M. Kramer (Eds.), *Tenth mental measurements yearbook.* Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

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Reviewed By

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DESCRIPTION

Jackson (1989) describes the Personality Research Form (PRF) as the result of "an application of developments in the areas of personality theory, personality assessment, and test theory to personality test construction" (p. 4). His goal was to establish an item pool and develop a set of personality scales to measure normal human functioning; he anticipated applications in both research and practice settings. Following a rational-empirical approach, a careful theoretical definition was formulated for each scale prior to beginning scale construction. He hoped to minimize the need to rely on empirical item analyses, thereby avoiding the purely empirical, atheoretical grouping of items into scales. Jackson believed this procedure would yield an instrument having broader application to the measurement of normal personality traits.

The PRF is based on Murray's (1938) need theory of personality which provided a comprehensive basis for describing normal personality (Jackson, 1989), but the dimensions were defined as bipolar. An effort was made to carefully delineate the distinction between closely related constructs by identifying behaviors not included in the definition of a particular construct. Items were written to represent each construct and evaluated for face validity before being submitted to item analysis.

The PRF is available in six forms. Forms A and B are strictly parallel and consist of 15 scales of 20 items each. Forms AA and BB contain the same 300 items plus an additional 140 items representing seven additional 20-item scales. The 352-item Form E contains 22 16-item scales. Form G, developed especially for computer scoring, is the same as Form E except that the 16-item infrequency scale is omitted and infrequent responses are identified by computer analysis. Each form is printed in a booklet containing brief instructions and the items. The directions instruct respondents to answer every question, responding true if they agree with the statement or decide that it describes them, or false if they disagree with the statement or decide that it does not describe them.

Printed answer sheets are available for handscoring all PRF forms except Form G. Handscoring can be accomplished by use of a single plastic scoring template. An answer sheet for optical scanning is available for Form G. Blank profile forms are available for all PRF forms except PRF-G. Norms for males are on one side of the sheet, those for females are on the reverse side. Spaces are provided on the profile for the name and age of the respondent, the date tested, additional notes, and the raw scores on each scale.

USE IN COUNSELING

Jackson (1989) developed the PRF for use in personality research and in schools, colleges, clinics, and business settings for career and personal counseling. The PRF was designed for use with normally functioning individuals ranging in age from early adolescence to adults; it is not appropriate for measuring psychopathology. A seventh grade reading level is required. Other instruments that could be used for this purpose include the California Psychological Inventory (CPI), the Jackson Personality Inventory (JPI), the NEO Personality Inventory-revised (NEO PI-R), and the Omnibus Personality Inventory (OPI). The NEO PI-R measures a broader sample of personality characteristics than the PRF. The JPI and PRF measure a partially overlapping set of constructs. The OPI is out of print at this writing.

All PRF forms are largely self-administering except the audiotaped version of Form E, but special administration and supplemental instructions may be necessary for individuals such as delinquent adolescents. No special training is needed to administer the PRF. It can be administered in groups of any size, but Jackson recommends at least one proctor for every 40 respondents. The *Manual* (Jackson, 1989) provides easy to follow guidelines for administering the PRF which should avoid most problems in administering it to a large sample. The time required for completion is as follows: Forms A and B, 30–45 minutes; Forms AA and BB, 40–75 minutes; Forms E and G, 45–60 minutes.

TECHNICAL CONSIDERATIONS

Jackson (1989) provides norms for PRF Forms A, B, AA and BB based on samples of 1,029 male and 1,002 female college students enrolled at over 30 North American colleges and universities. PRF-E (and G) norms are based on a sample of 1,350 male and 1,415 female college student volunteers enrolled in 33 North American universities. Supplemental norm groups are reported in the test manual for Forms A, E and G, but each is inadequate by itself and the collection of norm groups represents a meaningless hodge podge. Adequate norms are available only for college-aged individuals; interpretation of the PRF for anyone outside that age range is questionable.

The PRF Manual (Jackson, 1989) provides estimates of parallel forms reliability, retest reliability, and internal consistency reliability. Parallel forms reliabilities for Forms AA and BB, obtained from samples of 82, 91, and 192 subjects, range from below .60 to the mid .80s, with a median of approximately .75. One-and-two week retest reliabilities obtained from samples of 135 and 82 respondents range from the .40s to the high .80s-low .90s, with a median retest reliability in the low .80s.

Internal consistency estimates are especially important because construction of the PRF emphasized scale homogeneity. Kuder Richardson 20 reliability estimates for samples of 71 and 202 respondents generally range from the .50s to the mid .80s, with median reliability coefficients around .72. Split half reliability coefficients, reported for samples of 83, 84, and 192 respondents, are generally a bit higher, as would be expected on theoretical grounds. The failure to provide internal consistency reliability estimates for the large normative samples is a significant shortcoming.

Jackson (1989) summarizes data from four investigations in which PRF scores were correlated with peer or self ratings. Three of the four samples are small and each are non-probability samples drawn from a single campus. Each PRF scale correlated significantly with its criterion measure across all four studies, with median validity coefficients ranging from .28 to .56. A multimethod factor analysis of self ratings, peer ratings and PRF-AA scale scores is summarized briefly, but the full factor loading matrix is not reported and Jackson's procedure has been criticized by Golding and Seidman (1974).

Additional evidence of convergent and discriminant validity is provided in the form of the correlation of PRF scales with scores on tests such as the Strong Vocational Interest Blank, California Psychological Inventory, and Allport, Vernon, Lindsey Study of Values. The PRF scales generally have higher correlations with scales from the other instruments measuring the same or similar constructs (e.g., order-flexibility) than with scales measuring different or antithetical constructs. Some exceptions occur, but the data generally agree with theoretical expectations. However, the manual generally omits technical details and most of this research appears to be unpublished.

OVERALL CRITIQUE

The rigor that characterized the development of the PRF was not maintained during the development of norms and interpretive strategies for the PRF, assessment of its reliability, and validation of the test. Several aspects of the PRF limits its usefulness. First, the PRF has been criticized as providing an impoverished view of personality (Wessler & Loevinger, 1972; Hogan, 1978). The PRF measures a subset of Murray's (1938) needs, but ignores issues such as how needs interact, the interaction between needs and environmental presses, and the individual's pattern of needs-press relationships. These are keys to understanding the individual's uniqueness. The result is that the PRF provides information about some of the elements of personality structure, but not about personality dynamics (i.e., how the personality works).

Interpretation of the PRF is limited by the lack of adequate norms, and the failure to provide information on the meaning of PRF scores. The manual (Jackson, 1989) provides descriptions of high scores, but evidence to justify these interpretations is missing. The interpretation of moderate and low scores is not addressed. The manual suggests grouping PRF scales into seven superordinate categories defining bipolar trait categories (e.g., impulsivity and change versus harmavoidance, order and cognitive structure form an impulse expression category). No evidence is provided to document the efficacy of this procedure and the factor analyses reported in the manual (Jackson, 1989) seem to contradict this suggestion.

The evidence documenting the validity of the PRF is inadequate. The manual contains virtually no information about the relations between PRF scores and real life career development criteria, and the removal of response variation due to desirability may limit the validity of the PRF. Analysis of the desirability scale reveals items dealing with self-esteem, ethical behavior, life satisfaction, and sense of responsibility. Removal of variation due to social desirability reduced the influence of these important sources of personality variation on PRF scores.

In summary, the PRF suffers by comparison to other instruments which focus on normal, healthy variation in personality such as the NEO PI-R. I can not recommend the use of the PRF in practical or applied career counseling situations at this time. Use of the PRF in research entails a calculated risk because of the lack of demonstrated validity of the instrument.

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Wessler, R., & Loevinger, J. (1972). Review of the Personality Research Form. In O. K. Buros (Ed.), *The seventh mental measurements yearbook* (pp. 303–305). Highland Park, NJ: The Gryphon Press.

NOTE: Portions of this review were abridged from the author's original review in Volume III of *Test Critiques* with permission of Pro-Ed of Austin, TX.

Sixteen PF Personal Career Development Profile (PCDP)

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Target Population: 16 and up, younger age in high school settings.

Statement of the Purpose of the Instrument: An interpretive report based on the 16 PF, the PCDP interprets personality influences on occupations and careers. The report paragraphs deal with how the person solves problems, copes with stress, interacts with others, and matches up with different occupational settings.

Titles of Subtests, Scales, Scores Provided: Basic personality factor scores plus personality-based version of occupational themes like Holland's.

Forms and Levels Available, with Dates of Publication/Revision of Each: One version of the PCDP, can only be generated from 16 PF, Forms A, A + B, C or C + D. Form A or A + B are the preferred combinations. Form A/B last revised in 1968 (rdg level = 7.5); Form C/D in 1969 (rdg level = 6.5).

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: Administrator's Manual—1986, 16PF Handbook 1980, PCDP Manual, 1985.

Languages in Which Available: PCDP available in English only; 16PF testing materials available from IPAT in Spanish; German and French versions available from foreign distributors.

Time: Actual Test Time: 45–60 minutes.
Total Administration Time: 50–60 minutes.

Norm Group(s) on Which Scores Are Based: High school, college, and general population adult.

Manner in Which Results Are Reported for Individuals

Types of Scores: All scores are found on the last two pages of the report, following the narrative interpretation. Scores are sten scores (range 1–10, ave. = 5.5 st. dev. = 2.0)

Report Format/Content

Basic Service: on six pages of highly integrative narrative plus two score pages.

Options: PCDP + additional self-administered exercises based on PCDP. Report Format/Content for Group Summaries:

Basic Service: Group summary format.

Options: At additional cost, can provide group data on the scores of the 16PF factors; and, can run PCDP based upon model profile of the group.

Scoring

Machine Scoring Service

Cost of basic service per counselee: $16.00–$25.00 depending on quantity purchased.

Cost of options: PCDP + exercises based on PCDP + $2.00 additional.

Time required for scoring and returning (maximum) 24 hour turnaround time at IPAT (1 day + shipping).

Hand-Scoring: Not available.

Local Machine Scoring: Not available.

Computer Software Options Available: Interpretation (software not available, but if user has computer + modem + printer, can link directly with our computer for immediate turnaround).

Cost of Materials

Introductory Kit: PCDP (Personal Career Development Profile)—$38.75 (computer report).

Counselee Materials: Manual and test booklet are reusable.

Additional Comments of Interest to Users: Manual available for helping user understand contents of report and score pages.

Published Reviews:

Bloxom, B. M. (1978). Review of the Sixteen personality factor questionnaire. In O. K. Buros (Ed.). *Eighth mental measurements yearbook.* Highland Park, N.J.: Gryphon Press.

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DESCRIPTION

The Personal Career Development Profile (PCDP) is a computer-generated narrative interpretation of the Sixteen Personality Factor Questionnaire (16PF). The content of the PCDP summary is dependent upon the form of the 16PF completed by the respondent. the PCDP translates the basic personality data obtained from the 16PF into a description of the respondent's typical styles for handling various situations. Nine styles or patterns important to occupational exploration are discussed in the report. These patterns include testing orientation, problem solving, coping with stressful conditions, interpersonal interactions, organizational role and work setting, career activity interests, personal career lifestyle considerations, and occupational comparisons (Wholeben, 1988).

The 16PF, the basis for the PCDP interpretations, is a personality assessment of normal adults that is intended to expand the possibilities of understanding, describing, and predicting behavior (Rieke & Russell, 1987). The 16PF may be obtained in six forms: A, B, C, D, E, and CAQ Part 1. The PCDP can be generated from any 16PF form or from any combination of forms. The IPAT recommends using Form A because of the larger sample size used in obtaining the norms, and because more reliability and validation data are available.

The PCDP contains a variety of scores taken from combinations of the 16 personality factors; however, the occupational prediction scores, which most approximate the Holland Hexagon (Tinkham & Bush, 1983), may be of most interest to career counselors. Each occupation has the first three letters of the Holland model along with the prominent traits from the 16PF. In addition, second-order scores on Extraversion, Anxiety, Tough Poise, Independence and Control are given. Composite scores for Adjustment, Leadership and Creativity are also specified. Prior to making vocational observations and occupational profile comparison, personal counseling observations, intervention considerations, primary personality characteristics of special interest, and broad influence patterns are delineated.

Occupational profile comparisons include the following eight clusters: artistic professions, community and social service, scientific professions, technical personnel, industrial/clerical workers, sales associates, administrative and supervisory occupations and academic positions. Counselors can obtain a copy of the PCDP *Manual*, while clients might benefit from having a copy of the *Self-Motivated Career Planning* workbook to chronicle their career development.

USE IN COUNSELING

The 16PF-PCDP is intended to be used to enhance the assessment of a respondents' overall effectiveness and as a part of the career counseling process which includes an appraisal of interests and abilities, an evaluation of work history, and an augmentation of knowledge of occupations. The nonthreatening narrative report can provide an opportunity for respondents to gain insights about themselves, their values, and their behaviors.

Because the predictive power of each domain has been established separately, integrating the data acquired through the assessing of abilities, interests and personality traits and factors is a challenging task. To enhance the probability that counselors will interpret interdomain data appropriately, Lowman (1991) provides five preliminary principles for the interpretation and integration of complex psychological assessment results. They include: evaluate the data in each domain (interests, ability, and personality) as if the other data did not exist; generate separate hypotheses in each domain and make cross comparisons; support each tentative conclusion by at least two sources of data; remember it is not necessary to resolve disagreements or discrepancies in hypotheses; and summarize major conclusions in a point-by-point fashion. Lowman's principles would work well with the types of information generated by the 16PF-PCDP.

TECHNICAL CONSIDERATIONS

The PCDP is interpreted for an occupational setting using sten scores that are derived from significantly high/low attribute patterns based upon each of the following 16PF norms: gender, high school versus adult, and incidence of college training. The narrative report relies heavily upon the occupational choice theory developed by Holland (1973). Scores from Holland's six career personality orientations (enterprising, social, artistic, investigative, conventional, and realistic) have been regressed against the 16PF respective occupational themes (venturous, nurturing, creative, analytic, procedural, and mechanical). Correlations between Holland's Realistic and Investigative orientations and the 16PF's Mechanical and Analytical traits are both .16. Their shared variability is .026. Holland's Artistic and Social orientations correlates with the 16PF's Creative and Nurturance traits at .34, with shared variance equal to .12. Holland's enterprising orientation and the 16PF Venturous trait have the highest correlation of all six, with shared variance being .36. Lastly, Holland's Conventional type, as correlated with the 16PF's Procedural yields a .27 correlation with a shared variance of .07. However, this perceived relationship should be considered with caution. Bauernfeind, Olson, Read, and Rosen (1987) suggested that even though the 16PF and Holland's types appear to be directly related, they actually measure two different constructs. Instruments based on the occupational choice theory of Holland, such as the Self-Directed Search, are measuring expressed interests; the 16PF measures personality traits.

Mossholder (1985) noted that it is assumed that the information generated by the PCDP, correctly translates 16PF 'signs' into text. However, there is virtually no discussion of how the obtained scored are translated into words. The manual should better inform counselors of this interim process. The PCDP is also written in overly broad terms and the link between the 16PF signs and the PCDP narrative is clouded in obscurity. This connection needs to be more clearly described.

In addition, sample sizes are too small and limited in representativeness to make generalizations about total populations of workers and professionals. For example, Rieke and Russell (1987, p. 31) pointed out that 999 male police officers represent all peace officers, both male and female, working in the United States. Therefore, women looking for satisfaction in enforcement work would not be able to rely on the PCDP alone to give them trustworthy directional clues as to whether they should seek employment on a police force.

OVERALL CRITIQUE

The 16PF is widely used in career counseling contexts even though it was not designed for occupational choice or personnel selection. For example, it provides norm referents and occupational profiles for several groups such as musicians, accountants, sales personnel and airline pilots.

Personality variables, such as the ones measured by the 16PF and translated in the PCDP printout, may not effectively differentiate career choice. Mossholder (1985) suggests that the PCDP assumes that source traits are more powerful indicators of vocational preference than the surface traits revealed by interest inventories. However, this has not yet been proven. Comparison of a person's personality profile to a modal group of occupational occupants, therefore, may not appropriate unless it is first established that the necessary abilities and interest patterns are present. The 16PF may be useful in career assessment only when there is a clearly differentiated, occupation-specific profile on particular personality variables, and evidence exists that scoring in a manner different from the modal profile is associated with career dysfunctions or lowered work performance.

It is recommended that counselors assess clients interests first, abilities second, and personalities third. The valid analyses of these data requires conscientious professional practice. The 16PF-PCDP is challenging in that regard. The profile may be more effective when used with other sources of career relevant information. Respondents themselves should be consulted to resolve discrepancies between scores obtained on the 16PF, ability measures and interest inventories, and their own expressed occupational interests.

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CHAPTER XI

Instruments for Disabled and Disadvantaged Populations

McCarron-Dial System (MDS)

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Target Population: The MDS can be used with special education and rehabilitation populations at any level of intellectual functioning and with disabilities in one or more of the following areas: physical, mental, emotional or functional behavior. Target disability groups include: learning disabled, emotionally disturbed, mentally retarded, cerebral palsied, closed head injured, socially handicapped, and/or culturally disadvantaged. It can also be adapted for use with blind and deaf persons.

Statement of the Purpose of the Instrument: The MDS includes an assessment of five factors: verbal-spatial-cognitive, sensory, motor, emotional and integration-coping. Emphasis is on educational and vocational programming, development and placement. Based on significant research findings, the system predicts the level of vocational and residential functioning the individual may be expected to achieve after training. The predicted vocational level can be used to establish realistic vocational goals and/or appropriate vocational program placement. The detailed profiling of performance across five areas of behavior provides a holistic view of the individual's strengths and needs when compared to others in his/her predicted vocational range as well as the general population. Specific needs which must be remediated and/or accommodated for successful goal achievement are easily identified and can be addressed in an individualized program plan.

Titles of Subtests, Scales, Scores Provided: Peabody Picture Vocabulary Test-R (PPVT-R) Bender Visual Motor Gestalt Test (BVMGT), Behavior Rating Scale (BRS), Observational Emotional Inventory (OEI), Emotional Behavioral Checklist (EBC), Haptic Visual Discrimination Test (HVDT), and McCarron Assessment of Neuromuscular Development (MAND).

Forms and Levels Available, with Dates of Publication/Revision of Each: Not applicable.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: April, 1986.

Languages in Which Available: In addition to English, a Spanish version of the administration instructions is available.

Time: Actual Test Time: The formal testing required for the abbreviated battery can be completed in two to three hours. If the Observational Emotional Inventory is used instead of the Emotional Behavioral Checklist, two hours of systematic observation over a five-day period in a work or classroom setting is required.

Norm Group(s) on Which Scores Are Based: Norms for the PPVT, MAND, and HVDT involve 2,000 or more observations each. Norms for the OEI and BRS have been obtained on more than 500 normal and disabled adults each. The original normative sample for the entire system was 200. Additional samples have extended this number considerably. Pertinent empirical and statistical characteristics of the various norm groups are given in the manuals and in research publications.

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Manner in Which Results Are Reported for Individuals

Types of Scores: The standard format for comprehensive reporting includes specific scores (raw scores and standard scores); vocational and residential placement scores, behavioral observations, case history information, lists of strengths and deficits, programming priorities, and programming recommendations.

Report Format/Content

Basic Service: The forms which may be used for report development are the Individual Evaluation Profile (IEP) and the Individual Program Plan (IPP). The IEP allows the user to record and profile the total score for each test administered. The IPP allows for entry of subtest scores and right/left measures. These scores are then profiled for each of the factors. Space is available to include results from others tests and work samples; strengths and weaknesses; program goals and objectives; and descriptive or narrative information. Both the IEP and IPP include profile graphs which visually summarize all scores and compare them to the general population mean, special population mean, the individual's mean, and the vocational program standard score range.

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service: Not available.

Hand-Scoring: Not available.

Local Machine Scoring: Not available.

Provisions/conditions/equipment required:

Computer Software Options Available: Below are descriptions of various software programs available which utilize data obtained from the MDS:

Individualized Trait Analysis for Program Planning (ITAPP)—Developed as a resource for program planning, ITAPP permits efficient data entry at the subtest or item level. These scores are then translated into traits such as fine motor speed, lower body coordination, short-term memory, etc. (54 traits are possible) to provide a detailed analysis of behavioral functioning within each of the five MDS factors at a level useful for formulating a program plan for remediating or accommodating specific deficits. The traits are also profiled so the individual's strengths and weaknesses can be easily identified and performance compared to norms for the general population.

Computer Assessment Program (CAP)—CAP is a vocational evaluation/consultive report which consists of 5 major sections: (1) an individual profile with standard score conversions, (2) prediction of vocational and residential program levels, (3) identification of individual strengths and weaknesses as they relate to the general population and to the individual's own performance levels, (4) interpretive information for each factor, and (5) a programming worksheet which prioritizes the factors. CAP can be used alone or can access ITAPP data.

Occupational Exploration System (OES)—The OES Report provides a manageable listing of occupations suitable for vocational exploration, planning or development. The report includes a listing of tests administered with conversions to standard scores. Occupations requiring Verbal-Spatial-Cognitive and Sensorimotor scores similar to those of the evaluee are selected from a file of over 2000 jobs. These jobs are printed by Career Area, Worker Trait Group and DOT number. If the evaluee's academic achievement level falls below the desired minimum for any job listed, that minimum standard score is printed. The OES program can be used alone or can access CAP or ITAPP data.

Remedial Motor Training (RMT)—MAND subtest scores are used to generate a detailed motor factor analysis, a profile of relative strengths and deficits and ranking of motor deficits. Remediation strategies are then presented for each deficit area. This RMT Report includes a definition of neuromotor functions and general suggestions for remediation. The training activities, materials needed and criterion of performance are specified for the individual's level of performance. The RMT program can be used alone or can access ITAPP data.

As an alternative to purchasing software, MDS will process these reports with 24 hour turn-around after receipt of data. Prices vary as to type of report.

Cost of Materials (All prices good through 3/31/94)

Specimen Set: Not available.

Counselee Materials: The cost of the MDS is $2200.00. The only expendable items are the various test answer sheets, behavioral observation forms and report forms.

Additional Comments of Interest to Users: Supplemental instruments available from McCarron-Dial Systems include:

Street Survival Skills Questionnaire (SSSQ)—Provides an objective and reliable method of assessing adaptive behaviors. The SSSQ may be used with the BRS as part of the integration-coping factor ($285.00).

Perceptual Memory Task (PMT)—An assessment of individual learning style designed to assess fundamental information-processing skills essential for human learning and performance ($390.00).

Comprehensive Vocational Evaluation System for the Visually Impaired/Blind (CVES)—Identifies relative strengths and weaknesses in the areas of learning, problem solving and achievement; sensory and motor abilities; and emotional-coping and adaptive behavior ($2750.00).

Vocational Interest Exploration (VIE) System for Entry Level Employment—A focused approach to vocational interest exploration that provides essential occupational information organized to assist the individual in rational decision making ($350.00).

Achieving Behavioral Competencies—A program/curriculum for developing social/emotional skills with secondary students and adults ($137.50).

Published Reviews:

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DESCRIPTION

The McCarron-Dial System (MDS) is a battery of several tests, or more appropriately, a system for analyzing and interpreting data from several tests. The MDS is very sophisticated and requires specialized training from the publisher for appropriate scoring and interpretation. The MDS is a multi-factor battery which employs a neuropsychological processing model as the basis for assessment of educational and vocational functioning. The MDS was originally designed for the neurologically disabled, apparent in the authors' approach to the assessment process (Data Gathering—Hypothesis Formation—Hypothesis Testing—Feedback), and follows scientific methodology with the diagnostic—prescriptive model of assessment. The basic system comes packaged in three briefcases (not including the optional Street Survival Skills Questionnaire) and includes the Peabody Picture Vocabulary Test-Revised, the Bender Visual-Motor Gestalt Test, the Behavior Rating Scale, the Observational Emotional Inventory, (or the new optional Emotional Behavioral Checklist, which is considerably more time efficient), the Haptic Visual Discrimination Test, and the McCarron Assessment of Neuromuscular Development. The data analysis system also provides for the inclusion of scores and data from a Wechsler Intelligence Scale (WAIS-R, WISC-R) and any one of a number of achievement tests. A Vocational Interest Exploration System is being added. The MDS provides an analysis of client competencies across five factors: Verbal-Cognitive, Sensory, Motor, Emotional, and Integration-Coping.

USE IN COUNSELING

While the MDS is often considered categorically with commercial work sampling systems, it is neither a work sample nor a vocational aptitude test. Vocationally, the MDS's aim is to provide a prediction of an individual's potential for overall occupational competency, but not an area of projected competence. It is probably more appropriately described as a prevocational or work adjustment assessment device.

While the MDS provides factor scores in five areas, factor analytic research by the authors and others has revealed only three relatively pure factors (Verbal-Spatial-Cognitive, Sensorimotor, and Emotional-Coping) emerging from the collection of test data. The most appropriate use for counselors appears to be in rehabilitation settings with neurologically impaired or moderately mentally disabled clients where extensive diagnostic assessment is desired and practical, and where the basic assessment questions focus on the client's potential overall level (rather than areas) of vocational competence/success.

TECHNICAL CONSIDERATIONS

The MDS *Manual* is generally well-organized and provides detailed instructions for developing individual evaluation profiles. The background and purpose are well presented and a good case for construct validity of the system is established, but technical data on the *overall system* is lacking. Individual manuals for the Haptic Visual Discrimination Test and the McCarron Assessment of Neuromuscular Development are provided and include normative, reliability, and validity data on each of these individual instruments. No manuals or technical data are available for the Dial Behavior Rating Scale or the Observational Emotional Inventory.

The Haptic Visual Discrimination Test and the McCarron Assessment of Neuromuscular Development both were standardized on a sample in excess of 2,000 which appears to be representative in terms of age, geographic region, and SES. No normative/standardization sample data are presented on the Dial Behavior Rating Scale, the Observational Emotional Inventory, or on the MDS as a whole.

Reliability of the MDS as a whole can arguably be derived from the reliabilities of each of the individual instruments included within the system. Reliabilities (including both test-retest and split-half) are generally high, with most coefficients falling in the .90s. Individual task reliability coefficients on the McCarron Assessment of Neuromuscular Development range from a low of .67 to a high of .97, but the total score reliability is a robust .99. High reliability coefficients are essential in a collective system of tests such as the MDS to minimize the error of measurement. However, the user should be aware that in such a collection of instruments, the error factor is additive; the standard error of measurement of each of the tests included should be considered in reporting and interpreting data. Unfortunately, no reliability data is reported on either the Dial Behavior Rating Scale or the Observational Emotional Inventory.

Validity is the major failing of the MDS as a whole. While the manual presents an excellent description of the system's theoretical base, which provides a solid foundation for construct validity, little more than face validity is apparent in the manual for the system as a whole, as no concurrent or predictive validity data are provided. A number of studies have been conducted by the test authors and others (reported in the literature) reflecting concurrent validity of components of the MDS with other instruments (Chan, Parker, Carter, Lam, & Mecaskey, 1987) and predictive validity of the MDS for overall occupational level or vocational training competence (Dean, Bond, & Lewis, 1991; Rubinsky, 1991). The discriminant validity of the MDS in predicting the client's level of independent living (Blackwell, Dial, Chan, & McCollum, 1985) and in making neuropsychological diagnoses (Chan & Dial, 1987) has been demonstrated. However, these constitute only a part of the system's stated purposes. Predictive validity studies employing follow-up measurement of work performance across and within the various worker trait groups would considerably strengthen the value of the MDS for practitioners.

Validity data are reported in the respective manuals for the Haptic Visual Discrimination Test and the McCarron Assessment of Neuromuscular Development. Each of these instruments demonstrates generally acceptable levels of concurrent and content validation, and reasonably well-defended construct validity. Predictive validity (which this reviewer sees as most crucial in vocational assessment) is not addressed in the MAND and is discussed only as a part of the McCarron-Dial Work Evaluation System for the HVDT.

COMPUTER-BASED INTERPRETATION

The MDS is seen as most useful to practitioners when the available computer software systems are also included. Particularly when used as a vocational assessment tool, the Occupational Exploration System is an indispensable component. This software uses worker trait group and *Dictionary of Occupational Titles* information to list potential vocational areas for exploration. It falls short of predicting competence in worker functions or occupational categories (which is regrettable), but adds considerable information to aid in the career decision-making/vocational training program placement process. Without the computer software systems, one is limited to a prediction of general vocational competence, which research has shown can be accomplished through extended interpretation of a Wechsler Scale (Heinlein, 1987).

OVERALL CRITIQUE

The McCarron-Dial System is a well-conceived, multi-factor approach to assessment. As a system, it has its true strength in the neuropsychological assessment arena. The neuropsychological approach to vocational assessment is a very logical one, and in this area, the MDS shows great promise. In current form, however, it is limited to being a prevocational or work adjustment assessment device. Without predictive validity data on specific occupational categories it lacks the practical utility of instruments such as the APTICOM, TRANSIT, or SAGE. While the MDS is technically sound as a prevocational assessment device or broad vocational screening device, it is neither cost nor time efficient for use as such. The authors/publishers are urged to collect and publish predictive validity data on specific areas of occupational/vocational competence. The decision to include a vocational interest measure as part of the system is definitely a move in the right direction.

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NOTE: Portions of this review were abridged from the author's original review in the *Eleventh Mental Measurements Yearbook* with permission of the Buros Institute.

Pictorial Inventory of Careers (PIC)

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Target Population: Middle School, High School, Adult, Vocational Disabled, Disadvantaged.

Statement of the Purpose of the Instrument: The Pictorial Inventory of Careers is an affective domain interest assessment which requires no reading. It is a unique interest assessment that measures vocational interest using real life pictures instead of verbal statements. It is excellent for job placement and transition programs.

Forms and Levels Available, with Dates of Publication/Revision of Each: Regular Level Revised 1992; Low Level Revised 1992.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1992.

Languages in Which Available: English.

Time: Actual Test Time: 20 minutes.
Total Administration Time: 30 minutes

Manner in Which Results Are Reported for Individuals

Types of Scores: Percentile ranks/Preference Scores

Report Format/Content

Basic Service: Yes.

Options: Scoring available on Apple or IBM computer.

Report Format/Content for Group Summaries: Not available

Scoring

Machine Scoring Service: Not Available

Hand-Scoring

Scored by: counselor.

Time required for scoring: 2–3 minutes.

Local Machine Scoring:

Provisions/conditions/equipment required: Available on Apple and IBM computer disks.

Computer Software Options Available: Scoring only.

Cost of Materials: Specimen Set: $695.00.

Counselee Materials: 2 VHS Tapes—Regular & Low Level; 1 Manual, 100 Regular Level Response Forms—Consumable; 100 Low Level Response Forms—Consumable; 1 Carrying Case & 1 Computer Scoring disk.

Additional Comments of Interest to Users: Guaranteed update of any revisions for 1 year, 800 number for customer service.

Published Reviews:

Parish, L. H., & Lynch, P. S. (1988). Review of the Pictorial Inventory of Careers. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to career assessment instruments* (2nd ed.). Alexandria, VA: National Career Development Association.

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DESCRIPTION

The Pictorial Inventory of Careers (PIC) is an affective domain interest assessment instrument which requires no reading. The PIC is designed to measure vocational interests using real life pictorials instead of verbal statements. Its purpose is to help an individual identify areas of potential occupational exploration and training on the basis of his or her response to actual work scenes. The PIC employs a series of 119 scenes depicting vocational-technical careers in 17 vocational clusters. There are seven scenes for each career cluster with the emphasis on the work environment, as opposed to the individual worker.

There are two separate program levels of the PIC. Program #1, designed for use with regular vocational students, consists of the 119 scenes, plus 11 definitions of career clusters. Respondents are requested to express their preference on each item on a five point scale, ranging from 1 = ''strongly dislike,'' to 5 = ''strongly like''. Program #2, designed for use with low functioning students or students with disabilities, consists of the 119 scenes, to which the respondent is asked to indicate his or her preference on a three point scale, of N = ''don't like,'' ? = ''don't know,'' and Y = ''like.'' Program #2 is scored on a 1-, 3-, or 5-point scale. Both versions take approximately 22 minutes to complete and can be administered to small or large groups. Scoring time is estimated to be approximately two minutes with the scoring disk on an Apple or IBM PC, or other compatible computers.

The PIC software presents three options for a printed copy or a screen display of the PIC inventory results. The first option is a Standard Report format which is preset to include: Job Preferences, Career Areas, Job Titles to Explore, and Vocational Programs to Consider. The second and third options are entitled Custom 1 and Custom 2 Reports. These report formats are preset to include the opportunity of changing or adding to the job titles and/or the training programs.

The software is designed with two main menus, a Teacher Menu and a Report Menu. The Teacher Menu is designed to list student records, to delete or change student records, to set display, and to set or change formats. The Report Menu is used to enter student information and scores and to obtain a summary report of the results.

USE IN COUNSELING

Interpretation of the PIC results consist of examining the three dimensions of the interest inventory. These are: stated interest preference (items A to K), preference scores, and percentile ranks. Although each dimension can be considered separately, the counseling implications lie in the relationship of all three. When a client responds positively to a cluster, he/she should have responded positively to the A to K categories, which correspond to that cluster, and have a percentile rank higher than 50. For example, if the respondent registered a positive score (range 26–35) for Cluster 2 (Business- Data Processing) he/she should also have recorded check marks in the A to K section for categories B, E, F, and K. Of course, this will not always occur. In the event that this is not the case, it is probably an indication that the respondent needs more information regarding the cluster in which the positive interest has been expressed. It is also possible for a respondent to register a neutral or negative response to a cluster, and still be ranked about the 50th percentile, if the norm group responded more negatively to that cluster. In the event that such discrepancies occur, they can provide an opportunity for further counseling and guidance. According to the manual, when interpreting the PIC, it is essential to consider all three dimensions (stated interest preference, preference scores, and percentile ranks) before attempting to make any recommendations or suggestions. This is not possible when using Program #2, however, since it does not utilize the work environment section (items A to K).

TECHNICAL CONSIDERATIONS

The reliability of the Pictorial Inventory of Careers was determined by means of the test-retest method. The PIC was administered to a random group of 200 men and women enrolled in orientation classes at a large California community college. According to the manual, the group was ethnically and socio-economically heterogeneous and ranged in age from 17 to 55, with the mean age being 24 years. After a period of three weeks, 44 randomly selected participants (23 males, 21 females) "volunteered" to retake the test. Test-retest coefficients were computed for each of the 17 career clusters of the inventory.

The evaluation of raw scores was essentially a matter of determining whether the reliability coefficients are at an acceptable level. The coefficients range from a low of .61 for the Food Services cluster to a high of .93 for the Trade and Industry-Construction cluster. The mean and median coefficient of the 17 clusters was .81. According to the manual, comparison was made with the more established Strong-Campbell Interest Inventory (SCII). The manual points out that although the two instruments differed (pictorial versus verbal), they are alike in that they both attempt to assess vocational interests. Using the test-retest method with an interval of 30 days between administrations, correlations were similar to those obtained for the SCII.

The other focus of the evaluation of reliability was on the "preferences." These were verbal designations into which the raw scores were translated. The translations were accomplished in the following manner: Scores of 7–16 indicate a Negative preference, 17–25 indicate a Neutral preference, 26–35 indicate a Positive preference. The stability of scores of the three categories of Positive, Neutral, or Negative were investigated as part of the test-retest methodology. On the average, respondents indicated no shift 74% of the time. There was a shift of one category, such as from Positive to Neutral, 25% of the time, and a shift of two categories, such as from Positive to Negative, less than 1% of the time. According to the manual, with no established standard to serve as a reference point, any conclusions drawn from these results, are subject to debate. However, it would seem reasonable to conclude that they reflect favorably on the stability of the instrument.

Validation of the Pictorial Inventory of Careers was obtained by means of samples identified to represent each of the 17 clusters of the inventory. The sample sizes ranged from 30 to 49, with the average being 38. The PIC was administered in accordance with the directions and the group scores were compared with scores for individuals who would typically take the PIC, utilizing a series of t-tests. Significant differences ($p < .01$) were obtained for all 17 clusters in the direction favoring the group representing the cluster. According to the manual, the author was unable to find any published research on any instrument reasonably similar to the PIC for comparative purposes.

OVERALL CRITIQUE

The Pictorial Inventory of Careers, like all other assessment measures, has its strengths and limitations. The results of the interest inventory would be helpful in offering counseling suggestions, including the incorporation of realistic expectations, physical requirements, employment opportunities, and other occupationally related concerns. The manual is especially helpful in this regard.

The program is easy to follow and the directions are clearly explained. The video edition of the PIC has an excellent explanation of the directions for completing the interest inventory. The computer program certainly enhances the usability of the inventory.

The PIC does appear to have some inherent weaknesses. The accompanying material and manual reference a series of slides, yet the program is available in a filmstrip/cassette format as well as a video format. According to the manual, the interest inventory is non-reading, although it focuses on many occupational areas which would obviously require reading skills. As pointed out in a earlier review by Parrish and Lynch (1988), most of the jobs presented are not those that would be realistic and suitable for individuals with disabilities and learners from disadvantaged backgrounds. This still appears to be the case. Another weakness is related to the video cassette version; of the 119 scenes on the PIC #1, only seven depict any "action." The other scenes obviously are taken from the slide series and placed in a video format. The addition of action to the scenes would enhance and clarify the pictures and occupations being displayed. In several of the scenes it is very difficult to determine just what exactly is being depicted. As a result, it would be difficult to determine whether or not there would be an interest in that type of occupation. Furthermore, several of the scenes are clearly outdated by the automobiles shown, equipment being employed, worker hairstyles, and dress.

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Kosuth, T. F. (1992). *The pictorial inventory of careers*. Jacksonville, FL: Talent Assessment, Inc.

Parrish, L. H., & Lynch, P.S. (1988). Review of the Pictorial Inventory of Careers. In J.T. Kapes and M.W. Mastie (Eds.), *A counselor's guide to career assessment instruments*. (2nd ed.). Alexandria, VA: National Career Development Association.

Prevocational Assessment Screen (PAS)

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Target Population: Special needs populations—14 years to adult.

Statement of the Purpose of the Instrument: To assess motor and perceptual abilities that relate to performance requirements within local vocational training programs. Useful in vocational counseling, planning and curriculum modification.

Titles of Subtests, Scales, Scores Provided: Subtests: clerical perception, color discrimination, finger dexterity, form perception, manual dexterity, motor coordination, spatial discrimination. time and error percentiles are provided on each subtest.

Forms and Levels Available, with Dates of Publication/Revision of Each: Scoring and reporting form for administrator. No form is required for evaluee.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1992.

Languages in Which Available: English.

Time: Actual Test Time: Average 30–35 minutes, maximum 1 hour.
Total Administration Time: Average 55 minutes, maximum 1 1/2 hours.

Norm Group(s) on Which Scores Are Based: Mildly handicapped youth, disadvantaged youth, average vocational youth, employed workers.

Manner in Which Results Are Reported for Individuals

Types of Scores: Percentile ranks and verbal labels.

Report Format/Content

Basic Service: Two reports are included: A scoring report and a vocational performance matrix are computer driven, but also may be generated by hand.

Report Format/Content for Group Summaries Not available.

Scoring

Machine Scoring Service: Not available.

Hand-Scoring

Scored by: clerk; counselor.

Time required for scoring: 10 minutes.

Local Machine Scoring:

Provisions/conditions/equipment required: PAS may be computer scored on Apple or IBM type computers. Raw data is keyed directly into computer, a scanner is not required.

BEST COPY AVAILABLE

Computer Software Options Available: The vocational performance matrix is computerized.

Ways in which computer version differs: This program automatically compares students' scores to performance requirements in any vocational or job area.

Cost of Materials

Specimen Set: Includes one complete manual $25.00.

Counselee Materials: $1195.00 for complete set. All forms are reproducible. There are no additional costs no matter how many students are evaluated.

Published Reviews:

California Department of Education. CASAS. (1991). *Handbook for career and vocational assessment instruments.* San Diego, CA.

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DESCRIPTION

The Prevocational Assessment Screen (PAS) provides a measure of motor and perceptual abilities related to performance requirements within vocational training programs (Rosinek, 1985). The PAS consists of eight of the 15 assessment components of the Skills Assessment Module (SAM). The rationale for developing this subtest of the SAM was to provide an assessment instrument that, while not a comprehensive measure, would meet the needs of schools with large numbers of students and short amounts of time in which to assess them. The PAS contains eight activities which measure areas critical to successful performance in vocational training settings: alphabetizing (Clerical), etch-a-sketch maze (Motor Coordination), calculating (Clerical/Numerical), small parts (Finger Dexterity), pipe assembly (Manual Dexterity), o rings (Form Perception), block design (Spatial Perception), and color sort (Color Perception). The PAS is packaged in a wooden box which contains the necessary components for students to perform these activities. The PAS comes with a comprehensive guide to administration and scoring and all forms needed for recording student data, including an interest survey to be administered prior to the eight activities. The kit also includes computer scoring software (IBM/Apple II). In addition, there are three optional computer programs available: a program for generating career development Individual Education Plans (IEPs), a computerized learning styles inventory, and a local norm development system.

USE IN COUNSELING

The PAS was developed to assess students with mild disabilities and students identified as disadvantaged. The author maintains that while the PAS might be useful for other populations as well, the primary focus of the instrument is to facilitate mainstreaming of students with special needs into regular vocational training programs. The test is designed to be used only for preliminary screening, not to limit vocational options. It is also recommended that the PAS results be used in conjunction with other educational records, expressed interests, observations and recommendations, and parent input. The author maintains that the PAS may be used to assess aptitudes, work behaviors, learning styles, and cognitive performances.

The PAS must be administered individually; total administration time is approximately 50 minutes. No special training is required to either administer or score the test, which consists of eight hands-on activities. The PAS may be either hand-scored or scored by entering the results into a computer program (IBM and compatibles or Apple II). The PAS is very easy to administer; the manual includes complete instructions, and the components of the instrument are organized to facilitate administration.

The computer scoring is very efficient. The examiner simply enters the start and stop times and error counts for each activity and the computer automatically generates a printout of assessment results, including raw scores and percentiles for time and error scores for each activity. For comparison, the printout also provides a measure of time that an average worker employed in an activity involving similar skills would need to perform the task. Scores are presented in table format and averages for the student's time and error percentiles on each activity are presented in a bar graph format.

Hand scoring is more difficult; the only instructions included are to turn to page 24, which contains a norm table for "average" high school students. It can be assumed that hand scoring involves calculating times and errors for each of the activities and comparing these counts to those of "average" high school students.

Times (in minutes and seconds) and numbers of errors for each of the activities are converted to percentile scores; the two percentile scores for each activity are then converted to one percentile score, representing an average of the time and error percentiles. Scores indicate strengths or weaknesses for the eight skills associated with the activities. The manual contains a matrix of relationships among the eight aptitudes measured by the PAS and 13 vocational training programs (agriculture, business education, cosmetology, construction, drafting, electronics, foods, graphics, health, marketing, metals, home economics, and transportation/automotive). Aptitudes in this matrix are ranked from one to five in terms of their importance to the vocational programs. Student scores can be compared to the matrix to determine how their skill profiles compare to that needed in various vocational training programs. According to the manual, this matrix was developed based on research, but individual schools or districts can develop their own matrices based on input from their vocational teachers.

TECHNICAL CONSIDERATIONS

Two types of norms were developed for use with the PAS: percentile norms, used to help identify student strengths and weaknesses, and predetermined industry standard times, used to help determine potential competitiveness in a job setting. Percentile norms were developed by administering the PAS to 293 students at eight sites in Georgia. Sites included urban, suburban and rural settings; secondary and post-secondary vocational training schools; and diverse socioeconomic backgrounds. The norm group consisted of three samples: 112 "average" students (ages 14–18; grades 9–12; 50% male, 50% female), 61 disadvantaged students (ages 14–18; grades 9–12; 49% male, 51% female), and 121 students with mild disabilities (ages 14–16; grades 7–11; 64% male, 36% female). Students with disabilities included those with the following labels: learning disabled, educable mentally retarded, educably mentally handicapped, and emotionally disturbed); the term "disadvantaged" was not defined. A computerized local norm development system for the PAS is available for schools or districts that wish to develop their own norms.

Very little information is provided regarding the predetermined industry standard times, except that standard times for each of the activities were developed through Method-Time-Motion studies (noted in the manual as MTM-1) conducted by the Maynard Research Council. The manual states that standard errors of measurement, learning curves, and factor analyses were developed in 1987, but the exact nature of these statistics or analyses is not clear and they are not included in the manual. Test-retest reliability was obtained on a sample of 50 "average" students over a 3–5 day cycle. The sample was 50% male and 50% female, the age range was 14 to 18 (M = 15.7), and the education range was grades 9–12 (M = 10.16). Forty percent of the sample were from urban socioeconomic groups and 60% were from suburban groups; rural areas were not included. Pearson correlations were calculated for six of the hands-on activities of the test and Spearman's correlation was performed on the other two activities due to the pattern of distributions. Reliability coefficients range from .82 to .95.

According to the manual, criterion-related validity was established through the predetermined time studies conducted to establish an industry standard. Industry time standards were developed for each of the eight activities which comprise the test. Content validity was established via the Vocational Performance Matrix, which indicates the relationships between the activities and tasks performed in vocational training programs. The manual states that methods for establishing reliability and validity of instructor ratings for the development of this matrix are currently under review.

OVERALL CRITIQUE

The PAS includes very clear directions and provides a quick assessment of student aptitudes on eight activities. Some confusion, however, may occur because pages of the manual are not numbered consecutively; each section begins with page 1 and divisions between sections are not easily located. In addition, a considerable number of spelling, grammatical, and typographical errors in the technical manual detract from the ease of use. Dated terms are used to describe students with disabilities (i.e., educable mentally retarded) and people's first language is not used; however, the age of the test (1985) accounts for the use of these terms.

Since the norms were developed by averaging percentiles, which is not an appropriate technique since percentiles are non-linear scales, they may not be useful. While reliability and validity are reported, the methods used for determining them are questionable. Reliability was determined by testing and retesting over a 3–5 day period; concerns associated with this approach include a practice effect for tests of manual dexterity and a carry-over effect by retesting too soon after the initial test (Allen & Yen, 1979). In addition, the sample used in the reliability study was not representative of the population for whom the test was designed. While time studies were conducted with workers in industry, this does not ensure that the activities included in the PAS are valid measures for tasks these workers perform in their jobs. The primary basis for content validity is the Vocational Performance Matrix, which itself has questionable validity, particularly since the research on which it was based is not described.

Instructions in the manual state that the PAS should be used in conjunction with *other measures* for developing a vocational profile; this is very important considering the questionable norms, reliability, and validity of this instrument. If the PAS is to be used as a regular assessment measure, it might also be helpful to develop local norms to overcome the problems with the reported norms and to conduct local reliability and validity studies.

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Allen, M. J., & Yen, W. M. (1979). *Introduction to measurement theory.* Belmont, CA: Wadsworth.

Rosinek, M. (1985). *Prevocational Assessment Screen.* Cleveland, GA: Piney Mountain Press.

Reading-Free Vocational Interest Inventory (R-FVII)

Ralph L. Becker

Elbern Publications
P.O. Box 09497
Columbus, OH 43209

Target Population: Mentally retarded, learning disabled, and disadvantaged; ages 13 to adult.

Statement of the Purpose of the Instrument: To determine the vocational interest of the special needs student and adult in a wide range of occupations at the unskilled, semi-skilled, and skilled levels.

Titles of Subtests, Scales, Scores Provided: Titles: Automotive, Building Trades, Clerical, Animal Care, Food Service, Patient Care, Horticulture, Housekeeping, Personal Service, Laundry Service, and Materials Handling.

Forms and Levels Available, with Dates of Publication/Revision of Each: One form for males and females. Revised in 1981, 1988.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1988.

Languages in Which Available: English, French; Hebrew translation in progress.

Time: Actual Test Time: 10 to 15 minutes.
Total Administration Time: 30 minutes or less.

Norm Group(s) on Which Scores Are Based: Mental retardation, learning disabled, and disadvantaged youth and adults.

Manner in Which Results Are Reported for Individuals

Types of Scores: T-Scores, Percentile Ranks, Stanines, High/Low Interest.

Report Format/Content

Basic Service: Each examiner prepares his/her own report using information from the Manual.

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service: Not available.

Hand-Scoring

Scored by: clerk; counselor.

Time required for scoring: 10 minutes or less.

Local Machine Scoring: Not available.

Computer Software Options Available: Not available.

Cost of Materials

Specimen Set: $25.00 includes a Manual and 10 Test Booklets.

Counselee Materials: Test Booklet—not reusable. Profile Sheet—not reusable.

Additional Comments of Interest to Users: The Occupational Title Lists (OTL) are supplementary material to the R-FVII and is used with the Manual to identify realistic jobs/occupations for the special needs person. The 1992 revised OTL consists of 816 occupations that have been matched to the R-FVII interest areas and including DOT code identifiers.

Published Reviews:

Diamond, E. E. (1982). Review of the AAMD-Becker Reading-Free Vocational Interest Inventory. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to vocational guidance instruments* (pp. 162–165). Falls Church, VA: National Vocational Guidance Association.

Diamond, E. E. (1978). Review of the AAMD-Becker Reading-Free Vocational Interest Inventory. In O. K. Buros (Ed.), *Eighth mental measurements yearbook: Vol. II* (p. 1535). Highland Park, NJ: Gryphon Press.

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DESCRIPTION

The Reading-Free Vocational Interest Inventory, Revised (R-FVII) has been designed as "... a non-reading vocational preference test for use with mentally retarded, learning disabled, and disadvantaged individuals from age 13 to adult" (Becker, 1988, p. 2). The mentally retarded classification is subdivided into two categories: educable mentally retarded (EMR) and trainable mentally retarded (TMR). A disadvantaged person is described as one functioning "... below average expectations due primarily as a result of cultural, environmental, economic, or educational deprivation'' (Becker, 1988, p. 2). The learning disability classification is not described.

The R-FVII explores 11 vocational interest areas that are sampled by 165 neutral, nonspecific, black and white sketches representing job tasks. Each of the 165 items has been drawn to represent a male or female worker engaged in a job activity, most at the unskilled or semiskilled levels. The 165 items do not divide equally over the 11 vocational interest areas: ''41 of the items are keyed on more than one scale'' (Becker, 1988, p. 9).

The illustrations are presented in 55 triads, two per page, in a consumable test booklet. For example, Item #4 includes a choice among: (a) a woman working a mangle, (b) a woman stenciling boxes on a conveyor belt, and (c) a man checking an automobile's motor oil dip stick at a petrol station (reviewer's interpretation of illustrations). The male or female respondent is directed to select the one job activity among the three s/he ''like(s)'' the ''best.'' The Manual estimates that average completion time is 20 minutes or less (Becker, 1988, p. 1). The R-FVII is hand scored.

The R-FVII initially appeared in male and female versions (Becker, 1973). The inventory was revised and published in a single version suitable for male or female respondents (Becker & Becker, 1983). The Manual provides separate norms, validity, and reliability data for men and women.

USE IN COUNSELING

In addition to the *Manual*, the R-FVII is accompanied by the *Occupational Title Lists* (OTL) (Becker, 1992). This publication was developed as a tool to foster effective job training and job placement task solutions. The OTL is keyed to the *Dictionary of Occupational Titles* (DOT). The initial section of the OTL includes information on processes in the interpretation of the R-FVII profile. This section also includes a descriptive list of seven steps to be followed in the selection of occupational titles for job training or job placement. Administration of the R-FVII is the first step in this process, followed in order by using the R-FVII profile, reviewing supplemental information, studying the list of preferred occupational titles, reviewing job requirements, using labor market information, and talking it over with the client (Becker, 1992, p. 4).

The second part of the OTL keys the R-FVII vocational interest areas to specific DOT occupational categories and job titles. This section contains master titles and definitions, descriptions of job classifications, worker function ratings, and selected occupational titles arranged by R-FVII interest category.

TECHNICAL CONSIDERATIONS

Percentile, T-score, and stanine norms are provided separately by gender for eight respondent categories. Educable mentally retarded (EMR), trainable mentally retarded (TMR), and learning disabled (LD) norms are supplied for two age groups: 13 to 15 yrs, 11 mos and 16 to approximately 21 years. Norms are supplied also for Adults in Sheltered Workshops (ASW), 17 to 58 years, and Disadvantaged Adults (DA), 21 to 59 years. Sample size, mean IQ, IQ range, and mean chronological age describe each of the norming groups. The TMR sample sizes are small. The adult disadvantaged sample is about a third smaller in size compared to the EMR, LD, and ASW groups. Descriptive, but not specific (e.g., sample sources), information on norming procedures are given. However, the inventory user is informed that the percentile norms provide "... a comparison of individual students with each other, and with nation-wide results" (Becker, 1988, p. 10). The interpretation of stanines and T-scores, as well as of percentiles, is explained briefly.

Test-retest (two-week interval) reliability coefficients and standard errors of measurement have been computed for each interest area for male and female EMRs, LDs, ASWs, and DAs; reliability data are not available for TMRs. Sample sizes for the reliability studies ranged from 41 to 92; mean size was 65. Reliability coefficients were mostly in the .70 and .80 ranges; the R-FVII appears most reliable for the DA male and female samples. A statement is made that the K-R 20 reliability for all groups ranged from .61 to .94, with a median of .82 (Becker, 1988, p. 11).

Content, concurrent, and "status or occupational" validity statements are made about the R-FVII. A list of jobs "... known to be appropriate and realistic for mentally retarded and learning disabled individuals" was described by a series of job tasks, and ranked by "study teams" in terms of importance for successful job execution (Becker, 1988, p. 11). Individual job tasks were grouped based on the "logical commonality" of relationships into 11 clusters. The 165 line drawings were developed and keyed to the 11 clusters. Studies to determine the "statistical acceptability" of the illustrations were conducted with samples of 1,226 mentally retarded, learning disabled, and adult sheltered workshop individuals (Becker, 1988, p. 12). The Manual does not refer to the inclusion of a disadvantaged adult sample nor is there an indication as to the division of the 1,226 subjects across the the included groups.

Correlations between R-FVII scales and scales on the Geist Picture Interest Inventory (GPII) are offered to support the concurrent validity of the former. The studies were completed with small samples of male and female EMR (younger and older), LD (younger and older), ASW, and DA persons. Sample sizes ranged from 41 to 62; median size was 51. Coefficients of .27 or .28 (.32 in the smallest sample) or greater are statistically significant; practical significance is not addressed. The coefficients were mostly "... in the 30s and 40s" (Becker, 1988, p. 13).

To support of the construct validity of the R-FVII, profiles were graphed for male and female EMR (older and younger) and ASW workers in each of the 11 occupational interest areas. The total sample included 619 men and 640 women. This sample was not subdivided by handicapping condition. No information was given on the numbers in the occupational groups, except that no graph was prepared for the female workers in the automotive group because of the small sample size. Generally, the interest scale matching the work area received the highest score. No data were available on whether these high scores were significantly higher than scores in the other interest areas.

OVERALL CRITIQUE

The R-FVII has been designed as a vocational interest inventory suitable for use with special populations. Such a tool could be a welcome and needed addition to a not overcrowded field. However, study of the R-FVII and accompanying materials using the *Standards for Educational and Psychological Testing* (1985) as a frame of reference, confirms that some of the problems identified at the time of the Inventory's initial publication still persist. For example, validity and scoring issues that were identified by reviewers studying the first edition of the R-FVII have not been resolved (Diamond, 1978; Domino, 1978; Jackson & Turner, 1987; Miller, 1992; Spitzer & Levinson, 1988).

A number of the pictures score on more than one interest area, which means that the maximum score can vary across the interest scales (i.e., not total to 15, the case if each of the 165 illustrations loaded on one interest area) (Jackson & Turner, 1987). The respondent is asked to circle the picture in the triad liked the best. "Like" conveys a different meaning than "interest." This difference may result in the client's making a response from one orientation while the counselor interprets the profile from another. The direction to circle the best-liked picture also calls into question the statement in the Manual that persons are ranking each item (Becker, 1988, p. 1). A person may be ranking the three silently, but no information that can be scored is available about the relationships of the interest areas represented by the other two pictures in the triad. Domino (1978) pointed to the single choice as a waste of data. As Jackson and Turner state: ". . . three issues–double counting of certain pictures, different subjects making different comparisons, and variations in both total score and maximum scores for the 11 interest categories–make both the use of group norms and raw scores meaningless for the Reading-Free Vocational Interest Inventory" (1987, p. 237).

Assertions on content validity loose value because of the nebulous features in the information. Miller (1992) calls attention to the narrow range of the content of the inventory. He states that ". . . too many of the activities pictured are low functioning jobs that seem quite limited and stereotypical of the kinds of activities perceived to be appropriate for special needs populations" (p. 752).

Occupational or status validity is offered as a form of construct validity. The statement was made that the highest interest scale for each group was the scale that would be appropriate for that job category. No data were given on job category sample sizes or handicapping characteristics. Nor was the statistical significance of the high differences considered.

Both the Manual and the Occupational Title Lists that accompany the R-FVII provide steps to be followed for effective use. These lists should not be permitted to mask the need for a solid and substantial background of professional knowledge and experience with special populations for effective interpretation and application of the steps.

Westbrook (1988) identifies criteria for selecting appropriate career assessment instruments, recommending the *Standards for Educational and Psychological Testing* (AERA, APA, NCME, 1985) as the criterion for evaluation. Counselors considering use of the R-FVII should become familiar with Westbrook's article and the Standards. The instrument should be evaluated, employing the above described criteria and Standards before a decision to use it is made.

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Social and Prevocational Information Battery-Revised (SPIB-R)

Andrew Halpern, Paul Raffeld, Larry Irvin and Robert Link

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20 Ryan Ranch Road
Monterey, CA 93940

Target Population: Grade 6 and above plus adults. Mildly retarded students.

Statement of the Purpose of the Instrument: Assesses knowledge of life skills regarded as important for community adjustment.

Titles of Subtests, Scales, Scores Provided: Job Search Skills, Job Related Behavior, Banking, Budgeting, Purchasing, Home Management, Physical Health Care, Hygiene and Grooming, Functional Signs.

Forms and Levels Available, with Dates of Publication/Revision of Each: SPIB-R first published in 1975, revised in 1985. Form T for Trainable Mentally Retarded was published in 1978. Tests for Everyday Living (TEL), published in 1981 for L. D.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1986.

Languages in Which Available: English only.

Time: Actual Test Time: 20 minutes per test, 3 hours total.

Norm Group(s) on Which Scores Are Based: EMR and normal students.

Manner in Which Results Are Reported for Individuals
  Types of Scores: Standard scores, percentile ranks, objective mastery.

Report Format/Content for Group Summaries: Not available.

Scoring
  Machine Scoring Service: Not available.
  Hand-Scoring
    Scored by: clerk; counselor.
    Time required for scoring: 10 minutes.
  Local Machine Scoring: Not available.

Computer Software Options Available: Not available.

Cost of Materials
  Specimen Set: $17.00

Counselee Materials: Test Book = $2.10.

Additional Comments of Interest to Users: Instructional activities related to scores are available as Skills for Independent Living Kit geared to subtests in SPIB-R, SPIB-T and TEL. They make a complete system when used with the tests. All items are read aloud to students.

Published Reviews:

Daniels, M. H. (1985). Review of the Social and Prevocational Information Battery, Revised. In J. V. Mitchell (Ed.), *Ninth mental measurements yearbook: Vol. I* (p. 739). Lincoln, NE: University of Nebraska-Lincoln.

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Parker, R. M. (1988). Review of the Social and Prevocational Information Battery, Revised. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to career assessment instruments* (2nd ed.). Alexandria, VA: National Career Development Association.

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DESCRIPTION

The Social and Prevocational Information Battery—Revised (SPIB-R) is a 277-item paper-and-pencil instrument intended for use with mildly mentally retarded adolescents and adults. The original SPIB was developed at the Rehabilitation Research and Training Center in Mental Retardation at the University of Oregon (Halpern, Raffeld, Irvin, & Link, 1975) to measure knowledge on five long-range educational goals judged important to a student's post-school community adjustment: Employability, Economic Self-Sufficiency, Family Living, Personal Habits, and Communication. It yields raw, percentage correct, and percentile scores on the following nine scales (plus a total score): Purchasing Habits, Budgeting, Banking, Job Related Behavior, Job Search Skills, Home Management, Health Care, Hygiene and Grooming, and Functional Signs. The revision (Halpern & Irvin, 1986) replaced 34 of the original items, revised the answer format, and provided additional suggestions for test use (e.g., in the context of Individualized Educational Programs).

Items are read aloud to students to minimize the need for reading skills (unless reading skills are being assessed), and answers (mostly "true" or "false") are marked directly on the student's test book. Items are straight forward. For example: "The letters "oz" stand for pounds" (Number 17 Purchasing Habits subtest) with few items that might be confusing to students in different geographic/urban regions. Items that may be confusing are: Number 29 (same subtest), "When you buy a side of beef, some of your money pays for fat and bones that are thrown away;" Number 27 (Banking), "If you want cash from your savings account you have to fill out a withdrawal form first," (does not allow for computer cash machines) and Number 19 (Functional Signs), "This sign tells you where to go for emergency shelter" (picture of a Fallout Shelter sign). Only a few of the items reflect sex-stereotypes (e.g., the boss . . . he).

The ten-to-one ratio of students to test proctors may need to be adjusted locally; a lower ratio may ensure a more valid administration. Test administrators and scorers should note that the Student Profile Sheet (last page of the student's Test Book) contains errors. Specifically, the Banking subtest is not listed and the numbers for Possible Score and Reference Group Mean Percent correct (Junior High Students, Senior High Students) are missing for Banking. The Possible Scores and Reference Group Means are wrong for Job-Related Behavior (Junior High Students) and Job-Search Skills (Senior High Students). The Class Record Sheet has all subtests included and the correct number of items listed for each.

Another version of the battery is the SPIB-T, intended for use with the trainable or moderately mentally retarded. The SPIB-T has a two-part pretest to determine if students possess the skills to take the test. The SPIB-T differs from the SPIB-R by using a simplified yes-no response format and a different ordering of the subtests.

USE IN COUNSELING

Assessment tools such as the SPIB-R are becoming more important as legislation places increased emphasis on integrating students with special needs into regular and vocational education classes. Kapes, Parrish and Funderburg (1992) surveyed personnel responsible for vocational assessment in 20 regional Educational Service Centers in Texas, and found the SPIB among the most-used instruments. A review of the SPIB by Hegenauer and Brown (1990) also cites the need for instruments for working with special populations and, based on their clinical experience, they advocate the use of the subtests that evaluate the individual's knowledge in the areas of independent living and self-help skills. The SPIB is not intended for placing students in special education programs and is intended to be used along with other information about the student or instructional program.

Counselor use of the SPIB-R is likely to involve work with teachers, parents, and community or vocationally-related staff. Part 5 of the *Examiner's Manual* offers practical suggestions for use of the SPIB-R in a program-related assessment framework. This framework includes assessing student needs, program planning, program implementation and monitoring, and program evaluation. The framework focuses on integrating assessment and instructional materials, drawing on the authors' experiences and work with teachers in the development of the SPIB. Examples are given of how the SPIB-R content areas can be linked to instructional and behavioral objectives, instructional activities, and performance indicators. An important first step is the examination of the subtest areas, objectives and items in relation to the content of the local program and the students. The emphasis is on examining student performance in the context of other information, since the SPIB-R is a paper-and-pencil instrument and provides limited, albeit systematic, information. Another useful section of the manual describes the requirements of the IEP process and how the SPIB-R can be used, for the domains it samples, within this framework.

TECHNICAL CONSIDERATIONS

A major limitation of the technical data is that given for normative interpretation of scores. These data on percents passing an item, and raw score to percentage correct and reference group percentile rank are based on the original SPIB. The data were collected in the early 1970s. The primarily white sample consisted of 453 junior high and 453 senior high school EMR students in Oregon. There were approximately equal numbers of females and males.

The technical data presented for the SPIB-R continues to draw heavily on earlier studies with the SPIB. Other reviews have noted the limitations and strengths of the development and technical information. The strengths are in the development process, which included teacher ratings of the importance of objectives and of the relevance of items to subtest areas. Two studies have been reported since 1975, one in 1977 and one in 1979, that provide some validity-related evidence.

The reliabilities reported are those for the SPIB, and are generally satisfactory for program evaluation studies, and moderately satisfactory for evaluating individual students (KR-20s from .65 to .79, median .75 for the nine subtests; .94 for the total score). Stability coefficients (2-week retest interval) were also in the same range. Given the nature of the population for whom the test is intended, interpretation of subtest scores for individual students should be made in the context of other observations and information about the student. Full item and reliability data are not reported on the revised battery now being distributed. As the battery is used more widely, there needs to be a concerted effort to provide more up-to-date technical data on the instrument.

OVERALL CRITIQUE

The SPIB-R offers a useful, well-thought out, systematic and standardized assessment for individuals who are often assessed by teachers or parents, or by direct observation scales. The instrument thus offers some direct measure of their knowledge, but does not substitute for information from other sources. When used in conjunction with other observations, the SPIB-R should be a very valuable addition to assessing an individual student's understanding of some areas of functioning relevant to community participation. The instrument should also have value in planning and evaluating programs for adolescents and adults.

The limitations in technical data on validity and reference groups for score interpretation place a responsibility on counselors to examine carefully the instrument with the help of teachers to make judgements about appropriateness for local use. One aspect of these judgements should focus on item content, particularly the currency of items and illustrations for the variety of cultures and ethnic groups to whom the instrument will be administered. Also, the normative information for subtest and total scores is severely limited and counselors may want to encourage the development of local data, as appropriate. One alternative to assist interpretation is the development of local standards of performance, using some of the existing standard setting procedures (see Jaeger, 1989).

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Talent Assessment Program (TAP)

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Talent Assessment, Inc.
P.O. Box 5087
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Target Population: Middle School, High School, Adult, Vocational Handicapped, Disadvantaged.

Statement of the Purpose of the Instrument: The Talent Assessment Program is an assessment of functional aptitude using hands-on materials that require no reading which makes it an excellent tool for use with the handicapped.

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: Manual revised in 1988.

Languages in Which Available: English.

Time: Actual Test Time: 2 to 2 1/2 hours.

Norm Group(s) on Which Scores Are Based: Junior High, Adult, Mentally Handicapped.

Manner in Which Results Are Reported for Individuals
  Types of Scores: Percentile ranks.

Scoring
  Local Machine Scoring:
    Provisions/conditions/equipment required: Available in Apple and IBM Formats.

Cost of Materials
  Specimen Set: $5,590.00
  Counselee Materials: All testing of components for 10 hands on test, portable carrying cases, computer scoring package, 1 1/2 days of on-site training, shipping and handling all non-consumable.

Additional Comments of Interest to Users: Guaranteed updates for 1 year, 800 number for customer service.

Published Reviews:

Parrish, L. H. & Frances, J. (1982). Review of the Talent Assessment Program. In J. T. Kapes & M. M. Mastie (Eds.), *A counselor's guide to vocational assessment instruments.* Falls Church, VA: National Vocational Guidance Association.

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DESCRIPTION

The Talent Assessment Program (TAP) is a compact, durable battery of 10 hands-on tests which has been in use for some 15 years. According to the developer, the TAP is a "proven system for measuring an individual's functional vocational aptitudes." Printed material describing the system indicates its utility for virtually any population including nonreaders and readers, English-speaking and non-English speaking, the functionally illiterate, handicapped and non-handicapped, and the learning disadvantaged. Presently the system is being used in a variety of settings including school-to-work transition programs, rehabilitation facility programs, and private rehabilitation programs.

The 10 tests contained in the system can be grouped into the following broad categories: Visualization and Retention (1—Form Perception, 9—Ability to follow patterns, and 10—Retention of form and spatial details); Discrimination (2—Fine discrimination, 3—Color discrimination, and 4—Tactile discrimination), and Dexterity (5—Fine motor control, 6—Manual dexterity, 7—Quality performance, and 8—Ability to use large tools). Examples of activities include the ability to discriminate between items of differing colors by sorting (Test 3), the ability to use the hands and fingers in small assembly operations (Test 5), the ability to use small tools with precision (Test 7), the ability to use large, common hand tools (Test 8), and the capacity for mental retention of spatial and form details based on the structural details from Test 1 (Test 10).

The evaluation procedure using the system is fairly straight forward. All 10 tests are administered to an evaluee in 2 to 2 1/2 hours following procedures clearly outlined in the manual provided (Talent Assessment Program Manual, 1988). Instructions are given orally and by demonstration. The objective is to make certain that the subject completely understands the tasks. Test 1 must be administered first and Test 10 must be administered last. Tests 2 through 9 can be administered in any order. These test results can then be entered into the accompanying computer program for analysis. The subject's performance on the 10 tasks leads to the development of a client profile which can then be compared to specific job requirement profiles for jobs identified in the *Dictionary of Occupational Titles* (DOT) (U.S. Department of Labor, 1991a), work groups of the *Guide for Occupational Exploration* (GOE) (U.S. Department of Labor, 1979), and occupational data of the Department of Labor. Jobs are selected based on a match between the subject's test performance and job requirements for 500 core jobs identified by the Department of Labor. This job search feature allows the user to include additional client data generated from other sources such as

Physical Demands (lifting capacity, climbing and/or balancing), Working Conditions (indoor/outdoor, cold, heat, etc.), Math ability, Language ability, and Specific Vocational Preparation. It should be noted that in the *Revised Handbook for Analyzing Jobs* (U.S. Department of Labor, 1991b) the Physical Demands have recently been expanded from 6 to 20 and the Working Conditions from 7 to 14. These changes have not, as yet, been incorporated into the TAP software.

USE IN COUNSELING

Counseling individuals regarding specific vocational training and/or placement options requires that one have knowledge of both job requirements and client abilities. The TAP system, used in conjunction with other assessment instruments as suggested by the developer, is designed to provide data for such decision making. Once the complete battery is administered, the raw scores for each subtest are converted into percentile scores by the computer program provided. These scores can be used to compare the client's performance to any of the norm groups selected. The percentile scores are further converted into a client aptitude profile which is then compared to the profiles (job requirements) of occupations included in the data base. Client aptitude profiles which equal or exceed the aptitude profiles of jobs in the data base are considered matches. The system then prints each match, giving the DOT name and nine-digit code number, the GOE code number, the working conditions for the job, the physical demands, math, language and specific vocational preparation levels required.

The printout resulting from data analysis requires a certain level of sophistication on the part of the reader. Users should have some familiarity with the various occupational coding schemes and language utilized in the DOT and GOE. A knowledge of these resources and the data contained in each would allow the user to identify additional occupations within the same or different industries or by interest group. A knowledge of the methodology used by the software program to match client abilities to job requirements would also be advised.

TECHNICAL CONSIDERATIONS

Subject scores can be compared to junior high, adult, and mentally handicapped norm groups. Specific information describing demographic characteristics of these groups was not available to the reviewer.

One reliability study using the test-retest method after a six-month interval resulted in a reliability coefficient of .86 for the entire battery. No other reliability data are available.

No evidence of construct, concurrent, or predictive validity was available. There exist, however, any number of standardized tests which measure color discrimination, fine dexterity, gross dexterity, spatial perception, form perception, and tactile discrimination which could be used to validate a majority of the subtests within the TAP battery concurrently. It would also seem that sufficient numbers of persons would have been evaluated with the battery over the years to allow for at least one predictive validity study.

COMPUTER-BASED INTERPRETATION

While there is not a computer version of the TAP, Apple, IBM-PC and PC compatible software is provided with the system which allows the user to generate the following information:

- A summary of what each of the 10 tests measure.
- A bar graph depicting the evaluee's performance on each of the tests reported in percentile form.
- Evaluee strengths as indicated by the performance on each of the tests.
- Potential occupational areas based upon the match between Department of Labor data and individual test results.
- A comparison of the individual's attributes to any job in the TAP data base.
- A detailed analysis of specific jobs related to an individual's occupational areas.

The printout generated by the software first presents biographical data on the client tested. Next, each of the ten TAP tests are described in terms of what they measure. Following this description, a bar graph is displayed depicting client performance on each of the 10 tests. Next, time (in minutes) and percentile scores for each of the tests are displayed in table form. Interpretation then follows, outlining client aptitudes which could be considered as strengths. This information is then converted to a client profile and compared to the profiles of jobs found in the data base. This procedure results in the identification of matches between client aptitudes and job requirements. The programs to score and operate the job matching system require a minimum of 64K RAM, a monitor, one disk drive, and a printer.

OVERALL CRITIQUE

The Talent Assessment Program consists of 10 standardized tasks which measure abilities required by a number of occupations. The logic of matching a subject's tested abilities to job requirements is a strategy dating back to the turn of the century and is common to many commercially available assessment batteries.

The durability and portability of the system are certainly positive features, as are the 1 1/2 days of on-site training included in the initial purchase cost, the 1-800 support number, and free updates for the first year.

Criterion referencing of the test results to Department of Labor resources is also to be commended. There is concern, however, over the general lack of data to support the existence of the system's reliability and validity. One would certainly expect to find more than one test-retest reliability study on a system which has been in use for well over a decade.

Regarding the question of validity, the user is simply asked to take the developers word that the 10 tests are measuring what they purport to measure. The argument that the system would not have been used for such a long period unless it were valid is simply inadequate.

The developer notes that the system is best used to identify client potential within "work clusters" therefore making it difficult to establish predictive validity in relation to specific occupations. The software program which accompanies the system, however, enables the user to compare individual client test results to a data bank of 500 specific job titles and not work clusters. One would wonder how the identification of these specific occupations might be used in light of the fact that no data exist showing a relationship between the jobs identified and client outcome.

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NOTE: Portions of this review were abridged from the author's original review in Brown, C. D., McDanial, R. M., Couch, R. H., & McClanahan, M. (1993). *Vocation evaluation systems and software: A consumers guide.* Menomonie, WI: Matérials Development Center, Stout Vocational Rehabilitation Institute, University of Wisconsin-Stout. With permission of the publisher.

Wide Range Interest Opinion Test (WRIOT)

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PO Box 3410
Wilmington, DE 19804-0250

Target Population: Ages 5 through adult.

Statement of the Purpose of the Instrument: Measures strength of 18 interest and 8 attitude clusters; aids in vocational/career planning and counseling; gives a level of self-projected ability, aspiration level, and social conformity; assists in selection/assignment of prospective employees and trainees; helps coordinate instruction/therapy plans with interest/attitude patterns; measures motivation by likes and/or dislikes.

Titles of Subtests, Scales, Scores Provided: T-scores, percentiles, standard scores, stanines and scaled scores.

Forms and Levels Available, with Dates of Publication/Revision of Each: One answer sheet which can be hand- or machine-scored, and one profile report form for recording the test results. (1983 revision of answer sheet and 1979 edition of report form.)

Date of Most Recent Edition of Test Manual, User's Guide, Etc.: 1979.

Languages in Which Available: English only.

Time: Actual Time Test: Approximately 1 hour.
Total Administration Time: Approximately 1-1/2 hours including scoring.

Manner in Which Results Are Reported for Individuals

Types of Scores: T-scores

Report Format/Content

Basic Service: The results are presented on a report form which graphically shows an individual's strength of interest in each of the 18 clusters as well as 8 more general attitude clusters. This report form can be given to the client for vocational counseling purposes.

Report Format/Content for Group Summaries: Not available.

Scoring

Machine Scoring Service

Cost of basic service per counselee: $4.00.

Time required for scoring and returning (maximum): 48 hours.

Hand-Scoring: Not available.

Scored by: clerk; counselor.

Time required for scoring: Approximately 1/2 hour.

Local Machine Scoring: Not available.

Computer Software Options Available: Not available.

Cost of Materials

Specimen Set: Complete starter kit includes soft carrying case, manual, picture book, answer sheets, profile forms, and scoring stencils—$125.00.

Counselee Materials: Administrator's & Scoring Manual (reusable)—$30.00; Picture Book (reusable)—$20.00; Answer Sheets—50/package—$20.00; Profile Forms—50/package—$20.00; Set of 48 Scoring Stencils (reusable)—$45.00.

Additional Comments of Interest to Users: These prices are effective through 8/31/94.

Published Reviews

Hsu, L. M. (1985). Review of the Wide Range Interest Opinion Test. In J. V. Mitchell, Jr. (Ed.), *Ninth mental measurements yearbook*. Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

Manuele, C. A. (1985). Review of the Wide Range Interest Opinion Test. In J. V. Mitchell, Jr. (Ed.), *Ninth mental measurements yearbook*. Lincoln, NE: Buros Institute, University of Nebraska-Lincoln.

Stephen W. Thomas
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DESCRIPTION

The Wide Range Interest-Opinion Test (WRIOT) is a pictorial interest inventory that was originally developed in 1972 and revised in 1979. The test is composed of 150 sets of three pictures from which examinees choose the pictures they like best and least in each set. The results are reported in 18 interest clusters arranged into seven interest categories: liberal arts, business, services, sciences, mechanical, outdoor, and sports. In addition, eight opinion and attitudes scales (sedentariness, risk, ambition, chosen skill level, sex stereotype, agreement, negative bias, positive bias) are included. Results are given in T-scores and assigned descriptive statements ranging from "Very Low" to "Very High" on a continuous graph across the page.

The authors report that the picture drawings "include a wide gamut of work from unskilled labor through technical occupations to professional and managerial positions" (Jastak & Jastak, 1979, p. 1). The pictures were designed to represent activities listed in the *Dictionary of Occupational Titles* (DOT) (1965 and 1977 editions) and to "adequately represent both sexes and sizeable minorities'' (Jastak & Jastak, 1979, p. 1). The manual cites many advantages of picture interest inventories over ''verbal methods,'' and of the WRIOT in particular. The authors state that the WRIOT can be used with: 1) persons of good ability but limited education and reading achievement, 2) young children and persons with mental retardation who cannot read, and 3) persons who are ''emotionally disturbed'' and ''misconstrue the meaning of printed directions or statements.'' The instrument is considered to have utility with ''. . . the educationally and culturally disadvantaged, the learning disabled, the mentally retarded and the deaf. The picture titles can be read to the blind'' (Jastak Assessment Systems, 1992–1993, p. 30). As a result, the WRIOT has potential value for use with vocational rehabilitation clients and special needs students. It is important to remember that this is a non-reading and non-language test and not a culture free test. Although the Jastak Assessment Systems Catalog states that the WRIOT can be used with the ''culturally disadvantaged,'' the *WRIOT Manual* states that ''recent arrivals from other countries . . . disadvantaged and sheltered people'' may be unfamiliar with some of the pictures and, therefore, have difficulty grasping or interpreting the pictured activities (Jastak Assessment Systems, 1992–1993, p. 30; Jastak & Jastak, 1979, p. 2).

The WRIOT takes approximately 40 minutes to administer individually, and 50 to 60 minutes to administer in groups of 30 to 40. Within each set of three pictures the examinee is asked to choose the picture liked *most* and the one liked *least*, and record each response in the appropriate spaces on the answer sheet. If the examinee is unable to fill in the answer sheet, then the administrator can record the responses for the individual. In addition to the reusable picture book, a picture film strip is also available. Hand scoring requires the use of 24 stencils for males and 24 for females, and approximately 20 minutes to score the test and fill out the profile sheet. A computer scoring service is available through the mail.

USE IN COUNSELING

The *WRIOT Manual* contains two sections that are useful in the interpretation and counseling processes. The first is the interpretive section that provides 15 case studies covering examinee background, ability, personality, interests, and recommendations. Analysis information on the Opinion and Attitudes section of the *Profile for the WRIOT* can be found in two different locations in the manual and used with the case study information to enhance interpretation. The second section, Cluster Descriptions, lists the most highly correlated job activities (liked or disliked) by sex. Cluster Descriptions also contain a definition of the cluster, significant correlations with other clusters, and related job titles for each of the 18 interest clusters. The eight Opinion and Attitudes scales are also included in the Cluster Description section.

The WRIOT profile is interpreted much like any other interest inventory and is best used when incorporated with supplemental information such as historical data, work values and temperaments information, achievement and aptitude results, and findings from counseling. Including profile information in the manual on various disability and disadvantaged populations would be invaluable when interpreting results with special groups (Manuele, 1985).

TECHNICAL CONSIDERATIONS

With regard to normative information, descriptions were provided for the original and the 1979 standardizations. The 1979 sampling contained in the manual includes seven norm tables for females and seven for males arranged by age (5–7, 8–11, 12–15, 16–19, 20–24, 25–34, and 35 and up). The authors indicate they did not restrict selection of groups by economics, intelligence, or race and that "all ethnic groups were included as they are now represented in the population at large" (Jastak & Jastak, 1979, p. 32). They also state that persons were chosen to "represent appropriate proportions of average, superior, and inferior" mental ability (Jastak & Jastak, 1979, p. 32). There are no specific indications as to the extent persons who are disabled or disadvantaged, those for whom the test is recommended, are included in the norm group (Hsu, 1985). Scores are obtained by converting raw scores to T scores and then plotting the results on a profile.

In reference to test reliability, only split-half reliability coefficients are presented. The study in the manual reported split-half ranges between .83 and .95 for 150 males, and between .82 and .95 for 150 females. A description of the subjects in the reliability study was not given. The authors open this section of the manual with a strong, but unconvincing, criticism of test reliability, and this may be a reason why other reliability studies have not been conducted. Failure to report any stability coefficients is considered to be a serious omission as is the failure to conduct reliability studies on the groups for which this test was designed (Hsu, 1985; Manuele, 1985; Organist, 1985).

Information on validity in the manual is as limited as that for reliability. The authors open with the general argument that observed validity and opinions of the test user are more important and accurate than statistical inference. Statements such as "Validity is a behavioral concept, not a statistical ritual . . . The WRIOT will have to be validated everyday by those who use it . . . It will have to stand on its own merits and not on a table of coefficients" represent the authors' position (Jastak & Jastak, 1985, pp. 30–31). The manual only reports one correlational study between the WRIOT and the Geist Picture Interest Inventory. In a sample of 100 unidentified persons (45 female and 55 male), validity coefficients ranged from −.03 to .61. Although the authors' arguments concerning the problems with validity may have some merit the lack of validity studies is considered a serious shortcoming of the inventory.

OVERALL CRITIQUE

The WRIOT is one of the few picture interest inventories that covers a wide range of occupations as well as a unique variety of opinions and attitudes. Few non-reading inventories exist that can be used with rehabilitation clients and special needs students who may qualify for more than entry level and unskilled occupations, and the WRIOT currently meets this important need (Botterbusch & Michael, 1985). The answer sheet may be difficult for some lower functioning individuals to use without assistance. In addition, Organist (1985, p. 674) states ". . . the manual directs the examiner to provide instructions to the examinee that include nine separate elements. Given lower functioning examinees, who may have receptive language difficulties or memory problems, or who may be experiencing situationally based anxiety, these instructions may be excessive when verbalized in one presentation." The test is rather lengthy and "practitioners report that the length of the test is a problem for some populations (e.g., retarded, learning disabled, and severely handicapped)" (Manuele, 1985, p. 1739).

There is some ambiguity in the drawings and it is difficult at times to ascertain the activity; however, attempts to equally represent both sexes and different minorities is evident (Hsu, 1985; Manuele, 1985; Organist, 1985). Significant technological advances have occurred since the 1979 revision and some pictures should be revised (e.g., telephone switchboard operator, posting machine operator), and new ones added to reflect greater use of personal computers at the workplace. The process of scoring is simple, but requires the use of a scoring template for each scale on the test. As a result, scoring is time consuming and tedious and may motivate users to purchase the scoring service, if cost and turnaround time are not a problem.

One of the major drawbacks is the inventory's technical limitations. The authors spend most of their time criticizing the importance of reliability and validity studies. The norms are much improved over the original version, but limited in detail on population characteristics. The WRIOT has also been criticized for not providing rules or objective information on how to match profiles with occupations (Botterbusch & Michael, 1985; Hsu, 1985).

Although the WRIOT has its share of problems, when carefully used in combination with historical and interview information, and other test results, it should prove to be a worthwhile tool in career counseling and exploration. It is hoped that future revisions of the instrument can overcome its technical limitations.

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CHAPTER XII

Vocational Card Sorts

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INTRODUCTION

The card sort approach to career exploration has been available since the original descriptions of the technique by Tyler (1961) and Dolliver (1967) in the early 1960s. Williams (1978) summarized the approach as follows: (a) a deck of cards with an occupational title on each card is sorted by the client into three piles labeled "might choose," "would not choose," and "no opinion"; (b) the "might choose" pile is grouped into titles with similar reasons for further considering those titles; (c) the "would not choose" pile is also grouped by similar reasons for rejection; and (d) motives for choices are clarified to arrive at a final ranking of 10 titles for further consideration. The counselor is present during the administration of the card sort to assist clients in clarifying the reasons for their decisions and in exploring common themes in their career thinking. The card sort process does not have a scoring system for tying the client's responses together. Instead, the process is one of uncovering the client's valuing of various occupations, understanding the distinctions the client makes between individual occupations and among groups of occupations, and delineating the most important considerations for the client in making a career choice.

This review provides the reader with a historical and theoretical background for understanding the card sort and its use in career counseling. A summary of the research available on the usefulness of the vocational card sort is provided to clarify its efficacy in career exploration. A research version and six commercially available vocational card sorts have been developed that use occupational titles in the sorting process. In addition, three commercially available card sorts have been developed that use career values, skills, and/or interests instead of occupational titles in the sorting process. The present review briefly describes each of these card sorts and summarizes the research available on them. The review concludes with a summary of the applicability of the vocational card sorts to career counseling.

HISTORICAL AND THEORETICAL BACKGROUND OF THE VOCATIONAL CARD SORT

Leona Tyler's (1961) interest in the study of individual differences led her to the idea that the core of individuality consisted of a person's choices and the way that person organized them. She developed and researched a technique that involved the sorting of sets of cards to identify and understand a person's choices in four areas: vocations, leisure activities, community organizations, and first names. Dolliver (1967) modified and extended the vocations area of the Tyler technique and developed a set of vocational cards using occupational titles, and a method of counselor administration which he identified as the Tyler Vocational Card Sort (TVCS). Consistent with Tyler's views, Dolliver considered the TVCS as having some characteristics of a test, but thought the technique was best described as a structured interview. Finally, Dolliver presented a rationale for the use of the card sort based on Kelly's Personal Construct Theory (Kelly, 1955).

The value of the vocational card sorts in career counseling is described in a detailed review of the card sorts by Slaney and MacKinnon-Slaney (1990). They point out that the usefulness of the vocational card sorts as an effective, engaging, and innovative approach to career counseling is frequently mentioned as the unique and valuable aspect of this career intervention (Cochran, 1985; Crites, 1985; Dolliver, 1967; Goldman, 1983; Williams, 1978). For example, Williams (1978) compared the Tyler Vocational Card Sort with the criterion-based inventories that require only that clients choose among certain alternatives. He made the following argument:

> The VCS procedure, however, requires the clients not only to make choices among certain alternatives, but also to organize their choices into meaningful patterns and to define the reasoning behind their organizational patterns.
>
> At least three types of information can be gained from the VCS administration. First, some aspects of the client's decision-making process are observed. Second, the client's current level of vocational development soon becomes apparent. And third, information is obtained concerning the client's self-assessment of various skills and personality variables . . . more of the counselor-client time is being spent in systematic organization of the client's vocational information needs, motivations, and understandings. (p. 239, 243)

Goldman (1983) in his review of the Vocational Card Sort Technique, expressed a similar perspective to that of Williams. He viewed the Vocational Card Sort as a combined assessment and counseling technique that stimulates clients to examine their occupational values and interests. Goldman (1982) discussed the card sort as an outstanding example of the qualitative (rather than quantitative) assessment approaches that he views as worth far more attention than they have received and that may have greater potential for contributing more to clients than standardized tests. Finally, Goldman viewed the card sort (and other qualitative assessment methods) as requiring little cost for materials and as readily adaptable to almost any population (e.g., aged, handicapped, minority).

From the above sample of comments, it is apparent that the card sort prompts reviewers (Crites, 1985; Goldman, 1982; 1983; Slaney & MacKinnon-Slaney, 1990; Williams, 1978) to use human rather than psychometric terms, favorable rather than unfavorable commentary, and non-technical rather than technical language. In brief, the vocational card sort is regarded as a valuable and useful tool in career counseling because of the observations of people who use it. However, the card sort remains an underused tool in career counseling despite the many positive and enthusiastic reviews for its use and the growing empirical support for its efficacy in career exploration.

RESEARCH ON THE VOCATIONAL CARD SORT

Recent and comprehensive reviews of research on the vocational card sort are available (Croteau & Slaney, in press; Dolliver, 1981; Slaney & MacKinnon-Slaney, 1990). Most of the research conducted on the vocational card sort has used occupational titles in the sorting process and examined the outcome effects of the card sort in comparison to other career interventions. The interested reader is referred to these sources for a systematic and thorough review of the research.

Research evidence has established the card sort as a tool for career exploration and identifying interests, similar in overall effect to such widely used and well publicized career interventions as the Strong-Campbell Interest Inventory and The Self-Directed Search (Atanasoff & Slaney, 1980; Cooper, 1976; Dolliver & Will, 1977; Jones, 1983; Jones & DeVault, 1979; Lawler, 1979; Slaney, 1978; Takai & Holland, 1979; Talbot & Birk, 1979). That is, the vocational card sort has been as successful as these instruments in predicting the career choices of clients (Dolliver, 1969; Dolliver & Will, 1977; Slaney, 1978, 1983; Slaney & Dickson, 1985), reducing their career undecidedness (Slaney, 1983; Slaney & Dickson, 1985; Slaney & Lewis, 1986), demonstrating changes in their career choices (Slaney, 1978; Atanasoff & Slaney, 1980), and increasing satisfaction with their career choices (Lawler, 1979; Slaney, 1983; Slaney & Dickson, 1985).

Most of the above research compared career interventions using self-administered versions of the tests involved in the study. Moran (1991) investigated the effects of counselor-versus self-administration of the card sort on the career-related thoughts and decision-making of college students. The counselor-administered group members had significantly decreased their level of career undecidedness, generated more reasons for their choices, remembered more, listed more positive thoughts, and reported greater satisfaction with the intervention than the self-administered group. These results were consistent with the observations of past reviewers of the card sort technique regarding the usefulness of the counselor in the card-sorting process (Goldman, 1983; Slaney & MacKinnon-Slaney, 1990; Williams, 1978). Finally, Holt (1989) investigated the process of compromise using forced-choice interest format and a card sort in determining career choices based on interest and status factors. In addition to finding the card sort a useful instrument for researching factors involved in career decisions, Holt also suggested that career counselors return to the importance of considering the values inherent in the development of interests and the effect of those values on career decisions.

VOCATIONAL CARD SORTS USING OCCUPATIONAL TITLES

Based on the original work of Tyler (1961) and the expansions and rationale provided by Dolliver (1967), a number of additional vocational card sorts, also using occupational titles in the sorting process, have been developed. The technique has resulted in a research version (the Slaney Vocational Card Sort) (Slaney, 1981) and six commercially available vocational card sorts. The six commercially available card sorts are the Non-Sexist Vocational Card Sort (NSVCS); the Missouri Occupational Card Sort, College Form (MOCS); the Occ-U-Sort (O-U-S); the Vocational Card Sort that is part of the Vocational Exploration and Insight Kit (VEIK); the Missouri Occupational Preference Inventory, (MOPI); and the Occupational Interest Card Sort (OICS). The first five commercially available card sorts were reviewed by Dolliver (1981). The O-U-S and VEIK were reviewed in the *Ninth Mental Measurements Yearbook* (Cochran, 1985). The more important characteristics and differences in these card sorts (with the exception of the OICS) were reviewed by Slaney and MacKinnon-Slaney (1990). The Slaney and MacKinnon-Slaney review forms the basis for much of the information contained in the present review.

Slaney Vocational Card Sort (SVCS)

The research version of the vocational card sort has been developed by Slaney (1978) and used in a series of empirical studies on the card sort as a self-administered career intervention (Atanasoff & Slaney, 1980; Croteau & Slaney, in press; Slaney, 1978, 1983; Slaney & Slaney, 1981). According to Slaney and MacKinnon-Slaney (1990), the origins of the Slaney Vocational Card Sort (SVCS) can be clearly traced to the work of Dolliver and Tyler with a few important alterations. First, the Slaney Vocational Card Sort incorporated clients' rank ordering of descriptions of the six Holland personality types in order to encourage clients to think of themselves and the world of work in holistic terms. The SVCS included descriptions of the Holland types printed on 5 × 8 cards which the clients rank ordered according to how well each of the Holland types described them. This task encouraged clients to think about themselves as whole persons and to examine their career possibilities from an integrated and holistic perspective from the start of the career exploration process. The six Holland (1966) vocational personality types represent a widely used schema for understanding people and work environments in career counseling and provide a useful schema for clients to use in understanding themselves. This was a remarkably different method for obtaining Holland types. Other versions of the card sort derived Holland types from the Holland codes of the final ranking of the occupations by the clients. The Holland types are used later in making sense of the results of the SVCS and, along with "The Occupations Finder" from the Self-Directed Search (SDS), to suggest additional occupations that clients might wish to explore.

A small number of studies, described in detail by Slaney and MacKinnon-Slaney (1990), have investigated the rank ordering of the descriptions of the Holland types incorporated into the SVCS (Atanasoff & Slaney, 1980). Slaney (1978) concluded that a substantial relationship exists between the rank-ordered Holland themes and other methods of deriving themes. In addition, the rank-ordered Holland types were found to be more highly related to expressed vocational choices and college majors and significantly different from the relationships found for the Strong-Campbell Interest Inventory (SCII) and these same factors. Atanasoff and Slaney (1980) reported similar results when they compared the three-letter Holland themes from the SVCS with similar codes derived from the SDS and the SCII.

A second addition to the vocational card sort by Slaney incorporated the Basic Interest categories from the SCII into the SVCS. According to Slaney and MacKinnon-Slaney (1990), this was done as part of a series of studies that compared the SCII with the SVCS. Slaney (1978) and Slaney and Slaney (1981) found a clearer and more positive relationship between the basic interests of the SCII and the basic interests sorted as part of the SVCS than there was between the occupations that were sorted and also listed on the SCII. Slaney and MacKinnon-Slaney also explained that more recent uses of the SVCS have dropped the sorting of the basic interests to reduce the total time needed in administering the card sort. The use of the basic interests as a part of career exploration is recommended by Slaney and MacKinnon-Slaney as particularly relevant for younger students in junior high school or the lower high school years.

Finally, the occupations used by Slaney were those from the printout of results from the SCII. This was the procedure used by Dolliver (1967). According to Slaney and MacKinnon-Slaney (1990), Slaney added step-by-step directions for the self-administration of the vocational card sort and a descriptive pamphlet entitled "The Vocational Card Sort—Understanding Your Results." This pamphlet, first included in Slaney (1983), reviews the SVCS and instructs clients in using Holland's "Occupations Finder" to locate occupations based on their rank-ordered Holland codes. In addition, the pamphlet gives information on the *Dictionary of Occupational Titles* and the *Occupational Outlook Handbook*, explains ways of making sense of clients' final rankings of occupations, and suggests some next steps to take in the career exploration process. It also suggests readings and/or the use of a career counselor if clients have any questions or issues they wish to pursue. According to Slaney and MacKinnon-Slaney, the pamphlet adds potentially useful information to the SVCS, especially when self-administered. No specific studies have investigated the effects of the pamphlet as a separate part of the SVCS.

Non-Sexist Vocational Card Sort (NSVCS)

Dewey's (1974) paper entitled "Exploring Interests: A Non-Sexist Method," introduced the Non-Sexist Vocational Card Sort (NSVCS). Basically, she followed the steps articulated by Dolliver in administering the card sort using occupational titles. Dewey did include the Holland high point codes of the 76 individual occupations that were presented on the cards. In her article she presented the distribution of the occupations across the Holland types and described the occupations in the card sort as representative of a wide range of vocational values. However, exactly how the occupations were selected was not described. The distribution of occupations across the Holland types was unequal, ranging from nine occupations in the Conventional category to 21 in the Social category. Beyond the placement of the Holland high-point codes on the individual cards, it is unclear how the codes were to be utilized within the sorting procedure or within counseling in general. Only 12% of the occupations require a high school diploma or less while 65% require a college degree or more. Consistent with the title, Dewey implied that the instrument applied equally to men as well as women. Again, how this was determined was not noted. When clients take the self-directed version there are comments about sex bias in the accompanying materials. No studies on the effectiveness of this material were located.

The first published study investigating an adaptation of Dewey's Non-Sexist VCS was a dissertation by Cooper (1976). She compared a self-administered adaptation of the NSVCS with the then recently merged male and female forms of the SCII, and a no-treatment control group. Cooper found that subjects who had taken the VCS were considering more occupational options, more nontraditional options, and were reading occupational information more than were the control group members. The results for the VCS were unexpected, but seemed promising for expanding the number and type of the occupations being considered as well as the career exploration of college women. The author did not speculate about the reasons for the differences between the VCS and the SCII. Slaney and Slaney (1981) using the SVCS in comparison with the SCII reported results comparable to Cooper for the sexual composition of the occupations suggested by the two instruments.

Lawler (1979) also investigated the effects of the Non-Sexist VCS and the Self-Directed Search when both were self-administered in their standard formats or were revised to conform to the requirements of the NIE Guidelines on Sex Bias and Sex Fairness. Lawler studied 198 undergraduate women and found no differences based on whether the groups received the original or the revised versions of the instruments. There were also no statistically significant differences in the satisfaction with the various treatments or in the amount of vocational exploration that was reported or the vocational information that was requested. She did find that the NSVCS suggested a broader range of career alternatives to the participants than did the SDS. However, although the NSVCS suggested more nontraditional occupations to these women, there were no differences in the traditionality of the careers they were actually considering immediately following treatment and two weeks later. Slaney (1983) also reported that the occupations being considered by women three weeks after treatment were not less sexually stereotyped for the SVCS group. In general, the NSVCS suggested more nontraditional choices to these women and in other respects performed as well as the widely used Self-Directed Search.

Overall, the importance and effects of the "non-sexist" aspects of the Dewey card sort appear questionable, although the results of the two studies on the NSVCS are generally supportive of the vocational card sort approach.

The Missouri Occupational Card Sort (MOCS)

The Missouri Occupational Card Sort, College Form, by Krieshok, Hansen, and Johnston (1982) has 90 occupations which are evenly distributed across the six Holland types. The incorporation of the Holland types into the task is rather vaguely described as a "step which could be included" (p. 10). About a quarter of the occupations require a high school degree, 63% require a college degree, and 12% more than a college degree. The MOCS assumes that a counselor will administer it. It is the only one of the commercially available sorts that does not have instructions so clients can take the instrument without the assistance of a counselor. Another difference is that in addition to ranking the top ten "LIKE" occupations the clients also rank-order their bottom ten "DISLIKE" occupations. According to Dolliver (1981), the MOCS occupation cards contain the most occupational information. Whether this information is of significance in the effects the task has on clients is not clear. No empirical studies that investigated or included the MOCS were located.

Occ-U-Sort (O-U-S)

The Occ-U-Sort or O-U-S by Jones includes 60 occupational cards for each of three educational levels labelled "Plus 3 Level," "Plus 4 Level," and "Plus 5 Level." The numbers refer to the General Educational Levels that are taken from the *Dictionary of Occupational Titles*. "Plus" in the titles indicates that some occupations from higher levels (of required educational background) are also included. The occupations are distributed equally across the six Holland types. In addition to the cards, "A Self-Guided Booklet" is included to make the exploration experience self-directed. A specific approach to deriving a Holland Code is provided for the client based on the occupations that are sorted as "Might Choose." A "Guide to Occupations" contains 555 occupations that are organized according to Holland types, subdivided into worker trait groups, and assigned numbers according to the *Dictionary of Occupational Titles* and the *Guide for Occupational Exploration*.

In the review of the O-U-S by Dolliver (1981), he questioned the strategy of not including occupations in which either sex predominated that was adopted by the O-U-S for addressing sex bias. Dolliver suggested that including some of these occupations might make sense because they represented some rather common occupations and their exclusion seemed a bit strange. Westbrook and Mastie (1982) wrote another review of the O-U-S provocatively titled "Shall We Sort the Occ-U-Sort Into the Might-Choose, Would-Not-Choose, or Uncertain Pile?"

Westbrook and Mastie (1982) focused their concerns about the O-U-S on five basic issues. First, they found the Manual to be misleading because it cites four studies under the heading "Occ-U-Sort as an Individual Career-Counseling Tool." They took issue with this title because the four studies describing the usefulness of card sorts did not use the O-U-S. Second, they suggested that the Manual does not adequately support the claim that the O-U-S is effective as a "self-administered career-counseling experience" (p. 249). Their third concern was that the data supporting the claim that the O-U-S assesses vocational interests were unclear and/or inadequate. A fourth concern was whether the O-U-S codes were sufficiently dependable to serve as measures of vocational interests. Their fifth concern was that the Manual's claims to have eliminated traditionally sex-linked job titles were simply inaccurate. Finally, they were concerned that the reading levels assigned to the cards were also inaccurate. Jones (1982) responded to some of the criticisms and concerns raised by Westbrook and Mastie. He clarified some of the concerns of the reviewers that were based on his use of imprecise language. However, Jones' responses were not directly responsive to some of the other criticisms and concerns raised by the reviewers. It is clear that Jones did not agree with many of the points raised by Westbrook and Mastie. It is less clear that his responses were consistently directed at clarifying the exact status, adequacy, and nature of the data gathered on the O-U-S.

Two additional reviews of the O-U-S appeared in the ninth edition of the *Mental Measurements Yearbook*. Consistent with other reviews, Cochran (1985) noted that "In general, the technical information presented in the Manual is inadequate" (p. 1077). Crites (1985) noted, as did Westbrook and Mastie, that "the studies cited for it (i.e., the O-U-S) as an 'Individual Career-Counseling Tool' however, all pertain to other occupational card sorts. None pertains to the Occ-U-Sort" (p. 1078). All of the above reviews suggested that the data base provided thus far for the O-U-S and presented in the Manual contains inadequacies and, at the very least, more data and clarification are needed.

Jones and DeVault (1979) compared the Occ-U-Sort (O-U-S) and the Self-Directed Search. They used 95 high school students from a variety of training programs. Half of the students took the O-U-S and the other half took the SDS. All took Holland's VPI and filled out a Satisfaction Opinionnaire. The Holland codes derived from the SDS and the O-U-S did not differ significantly in their relationships to the Holland codes of the VPI.

In a later study, Jones (1983) again compared the O-U-S and SDS with 578 8th and 10th grade students from North Carolina. The study was remarkable for the lack of differences, given the large number of subjects. The study also used a rather simplistic approach to the analyses of the results and failed to look for possible gender or race differences. The O-U-S did, however, appear to perform as well as the more widely used SDS on the dimensions measured.

The Vocational Exploration and Insight Kit (VEIK)

The Vocational Exploration and Insight Kit (VEIK) by Holland and his associates (1980), is really a combination of a Vocational Card Sort (VCS), the Self-Directed Search, and its instructional booklet, "Understanding Yourself and Your Career," the "Occupations Finder," and "Action Plan Workbook," and "Counselor's Guide." The VCS consists of 84 occupations, equally divided over the six Holland types. About one quarter of the occupations require a high school diploma or less, half require a college degree, and another quarter a postgraduate degree. The occupations are the same as those that are used in the SDS as well as in the Vocational Preference Inventory. Although the cards have only the occupational titles printed on them, the supplementary materials provide additional information that is relevant to career exploration and thinking about career choices and issues. Instructions are provided for computing a Holland code.

Reviews of the VEIK appeared in the *Ninth Mental Measurements Yearbook*. Daniels (1985) and Tittle (1985) seemed generally positive about the VEIK. Both also suggested that more research was needed on the package. Daniels suggested that the VEIK was not significantly more helpful in expanding users' awareness than was the SDS alone. Tittle noted the same effect and cited the studies that led to that conclusion, that is, Takai and Holland (1979) and Talbot and Birk (1979). In addition Tittle noted that "only highly motivated and articulate clients are likely to complete this set of activities successfully" (p. 1676).

This latter point would appear to refer to the time required to complete the entire VEIK which Dolliver (1981) stated is three to four hours. If the total VEIK does not produce any differential additive treatment effects beyond those experienced by clients who take only the SDS, then very basic questions are raised about the VEIK. At the same time, there is also a question whether the conclusions about the lack of effects for the VEIK are justified based on the limited empirical scrutiny it has received.

The Missouri Occupational Preference Inventory (MOPI)

The Missouri Occupational Preference Inventory by Moore and Gysbers [with Pamela Carlson] (1980) contains a total of 180 occupations, with 60 at each of three educational levels requiring: (1) a high school education or less, (2) high school plus additional training, and (3) a college or postgraduate degree. The Holland types are not equally represented. The MOPI includes more occupations at the lower educational level than does any other card sort. The Manual relates occupations to the DOT and illustrates how a Holland code can be determined based on the occupations chosen. In their book entitled *Career Counseling*, Gysbers and Moore (1987) devote a chapter to "Occupational Card Sorts." They are quite concrete in their directions for using a card sort in career counseling and they focus on the specific approach used by the MOPI. It is clear in this chapter that the MOPI is, in fact, quite different from the approaches taken by the other card sorts.

For example, the directions instruct the client to consider the occupations individually instead of as part of a group of related occupations after the initial sorting of the cards into "Like", "Dislike," and "Undecided" groups. The counselor records the reason beside each occupation and places a slash mark beside each reason on the "Finding Themes" worksheet each time a reason is repeated. When the client has gone through all the occupations in the three groups, the reasons or themes are rank-ordered based on frequency on the "Understanding Themes" worksheet. The "Likes" are rank-ordered first. Then the "Dislikes" column is filled in by placing "Dislikes" that are the opposite of the "Likes" in the rank across the page. Finally, opposites are generated for the "Likes" for which no opposites were noted.

Then the client is asked to rank-order the occupations using the "Like" pile. The three-letter Holland codes of the occupations that are ranked are then used to derive a Holland code for the client. The authors use a weighted scoring system similar to that used as part of the SDS. Finally, a worksheet entitled "Your Career Information Summary" is used to "help the client focus on what has been learned" (p. 146).

In Dolliver's (1981) review it is noted that the MOPI takes about one-half hour. The source for this estimate is unclear and, given the apparent complexity of the various operations, this sounds like an extremely conservative estimate of the time required to self-administer the MOPI. No studies on the MOPI were located and Gysbers and Moore cite no studies in their chapter.

Overall, the MOPI represents a different, if unexamined, approach to the card sort task. It is unclear whether the novel approach to examining the reasons for liking and disliking occupations leads to different effects or if the self-directed version is effective in examining the themes when clients take the MOPI by themselves.

Occupational Interest Card Sort (OICS)

The Occupational Interest Card Sort was developed by Knowdell in 1981. It consists of 113 occupation cards and 5 category cards, which the client uses to divide the occupations into the groupings of "Definitely Interested," "Probably Interested," "Indifferent," "Probably Not Interested," and "Definitely Not Interested." The goals of the OICS are to assist the client to identify and rank field and occupational interests, identify common characteristics shared by preferred occupations, and clarify the degree of readiness, the skills and knowledge needed, and the competency-building steps for entry into preferred occupations. The OICS also includes nine supplemental activities intended to promote further exploration of career interests, such as "Role Mode Recall" which spotlights the impact of significant people on occupational choices and "Field Research" which outlines the steps to take to interview people in personally appealing lines of work. No empirical studies that investigated or included the OICS were located.

CARD SORTS USING CAREER VALUES, SKILLS, AND/OR INTERESTS

The commercially available card sorts that use values, skills and/or interests in the sorting process are the Career Values Card Sort Kit (1991), the Deal Me In Cards (1992), and the Motivated Skills Card Sort (1992). In contrast to the vocational card sorts described above which are generally aimed at identifying the characteristics of occupations that are important to an individual in making a career choice, these card sorts are aimed at achieving job satisfaction and/or job change from an examination of career values, skills and/or interests.

Career Values Card Sort Kit (CVCSK)

The Career Values Card Sort Kit (1991) consists of 41 cards which describe the variables of work satisfaction, such as: time, freedom, precision work, power, technical competence and public contact. The goal of the CVCSK is to allow clients to prioritize their values relating to work satisfaction, to determine the intensity of their feelings about those factors, and to determine areas of value conflict and congruence. The kit also includes five supplemental activities, such as the Memory Scan to bring to mind times of values consistency and values conflict, and the Career Values Diary which suggests several ways of tracking progress in acting on "always valued" factors.

According to the developers, this card sort is useful with people seeking or changing jobs, and those interested in improving their present jobs. The CVCSK was developed by R. L. Knowdell in 1981. No empirical studies that investigated or included the CVCSK were located.

Deal Me In Cards (DMI)

The Deal Me In Cards consist of 52 interest/skill cards divided equally into the four categories of data, people, things and ideas. The DMI Cards are intended for use with clients seeking a career for the first time, clients seeking to change careers, and those desiring to improve their present position. The stated goal of the DMI card sort is to provide a method of assessing interests and to facilitate the choosing of compatible career options. The DMI workbook provides 22 activities, which can be accomplished individually or in groups, dealing with the topics of job searching, job orientation, performance and reputation, enrichment/enhancement while on the job, and managing change. No studies were located to determine the effectiveness of these materials.

Motivated Skills Card Sort (MSCS)

The Motivated Skills Card Sort was developed by Knowdell in 1981. This card sort consists of 48 skill cards and eight category cards. The MSCS is designed to identify the level of proficiency in a broad range of functional-transferable skill areas, to identify the level of motivation to use those skills, to identify skills desired to be emphasized and minimized in future work assignments, to sketch a scenario of career satisfaction building upon motivated skills, and to identify factors necessary to address in order to accomplish it. According to the developer, this card sort is useful for individuals in identifying skills that are important to an individual's career satisfaction and success. No research on the effectiveness of these materials was located.

SUMMARY

In summary, the vocational card sorts seem like promising approaches to include in career counselors' armamentaria of interventions. Although the research has barely begun to investigate the effects of the card sort technique in career counseling, reviewers and users of the card sorts seem to enthusiastically support the use of this technique in career counseling.

The flexibility of the vocational card sort technique makes it an appropriate career intervention for use with a broad range of clients in a variety of settings. The materials are relatively inexpensive and simple to use while providing a structured format for counselors to learn about their clients' vocational interests and their methods of organizing preferences and making choices. The empirical investigations on the research version and, to a limited extent, given the research presently available, on the commercial card sorts using occupational titles, suggests that these instruments are similar in overall effect in career exploration and identifying interests to such widely used interventions as the SCII and the SDS (Slaney & MacKinnon-Slaney, 1990). Which career exploration technique to use will depend on the purposes of the career intervention. When career counselors are looking for a richness of material regarding a client's vocational preferences and an individual's methods for organizing and making choices, the less structured vocational card sorts may yield more applicable information for career counseling than the more focused career interest inventories.

When using vocational card sorts the counselor can choose to facilitate the card sorting process or to provide the card sort in a self-directed manner along with instructions and, if appropriate, process the results with the client later. Moran's (1991) study seems to suggest that the presence of a career counselor does make a positive difference in the administration of the card sort. The complexity of the presenting issues and the time the counselor has available are important determinants in which method the counselor selects. In addition, there is some research to suggest that the more undecided client both wants and needs more from career counseling than the more decided client (Moran, 1991; Slaney, 1983). Therefore, the client's level of career undecidedness may also be an important factor in choosing both type of interventions and modes of administration.

Finally, the same sorting techniques as discussed in this review and used in sorting occupational titles, values, skills and/or interests have also been used in a variety of other ways in career counseling. The counselor could modify this technique to meet the needs of a particular client or a particular target population (see Slaney & MacKinnon-Slaney, 1990, for a description of possibilities). For instance, in a university or college setting the same technique works with college majors. By dividing the available college majors into three groups (Might choose, In question, and Would not choose) and then providing labels for clusters, students can understand their interests in different majors and develop a plan with their counselor for further exploration of these areas.

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CHAPTER XIII

Using Portfolios for Career Assessment

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BACKGROUND

This edition of *A Counselor's Guide to Career Assessment Instruments* would not be complete without a discussion of Career Portfolios, their use in school settings, and their philosophical links to the goals outlined in the U.S. Department of Labor Secretary's Commission on Achieving Necessary Skills (SCANS) Report, *Learning a Living: A Blueprint for High Performance* (1992). As outlined in the Report, the goal of education needs to be expanded to include preparing students to possess the knowledge and skills necessary to compete in a global economy. All students will need to understand that there is a connection between what they learn in school and their future success in the workplace. As a result, "the more closely learning is tied to 'real world' contexts and consequences, the more profound and durable it becomes" (p. 20).

As the goal of education includes preparing students for the world of work, school career guidance and counseling programs continue to be very important. Although career guidance and counseling have long been an established part of comprehensive school guidance programs, these programs are now further challenging school counselors to take an even more active part in helping students look beyond the schoolhouse to the different roles they will play when they leave school to become workers, citizens, and lifelong learners. Counselors are challenged to help students understand that life and work satisfaction will depend upon the extent to which students find adequate outlets for their abilities, needs, values, interests, personality traits, and self-concepts. Meeting this challenge will involve changes in the school curriculum, and these changes may require counselors to work more closely with instructional staff in order to infuse career awareness activities and experiences throughout the entire curriculum (Chew, 1993, pp. 22–29).

A tool currently being used by many counselors to integrate career development into the entire curriculum and to help students understand the link between what they study in school and their future successes on the job is the Career Portfolio. The use of portfolios in education is not new. For example, science portfolios and writing portfolios have often been used in education. Writing portfolios are particularly valuable in assessing students' learning because they contain rich examples of students' work collected over a period of time (Moss, et al., 1992, p. 14). However, the use of portfolios in career guidance and counseling is fairly recent, and many school career guidance and counseling programs are now using them in order to help students explore the developmental aspects of their learning and growth. Career Portfolios also provide students with opportunities to demonstrate that they have the skills and competencies necessary to be successful in the workplace or to successfully enter some type of postsecondary educational and/or training program.

A Career Portfolio, by definition, is a structured method designed to allow students the opportunity to collect a great deal of information about themselves. Depending upon the career guidance and counseling program, the actual portfolio may be a folder, journal, notebook, diary, computer disk, or any other method or medium that will enable the students to summarize and present important information about themselves. According to Paulson, et al. (1991) in the article, "What Makes a Portfolio a Portfolio," whatever medium or method is used, each student's Career Portfolio should:

- Be separate and different from the student's cumulative folder. (Achievement test scores and other test scores, such as scores on performance assessments, writing assessments, and competency tests; grade transcripts; and other information typically found in a student's cumulative folder are included in a student's Career Portfolio only if they take on new meaning within the context of the other information included in the portfolio. While many Career Portfolios do contain this type of information, some do not.)
- Offer the student the opportunity to monitor his or her own academic progress, with the end product demonstrating that the student has engaged in the process of self-assessment.
- Typically, under the direction of counselors, teachers, and others, such as members of the business community, allow the student the opportunity to select what is to be included in his or her own portfolio, thereby helping the student learn to value his or her own work.
- Convey explicitly or implicitly the student's purpose for forming the portfolio and the goals he or she has established.
- Contain a variety of evidence that the student has attained certain workplace competencies and skills. (Supporting evidence may include letters of recommendation, resumés, work histories, records of extracurricular activities and achievements, and samples of projects and reports completed.)
- Allow a view of the student over time. (The information included in the Career Portfolio should illustrate progress. Progress may be evidenced by samples of student work, such as projects, reports, and achievement test scores. It may also include changes observed on interest inventories, attitude measures, or aptitude tests.)

Ultimately, each Career Portfolio should reveal information about the student's journey through the career-development process and information showing the student's progress toward reaching his or her goals.

RATIONALE FOR DEVELOPMENT

The recent use of Career Portfolios for the purposes of career guidance and counseling closely parallels the movement toward the development of new types of tests and activities designed to complement traditional assessments. Historically, counselors have used various standardized career assessment instruments, including multiple-choice tests, in order to help focus on the students' successes in educational, occupational, and other types of career options (Herr, 1988, pp. 18–19). However, while many of these tests do provide valuable information that can be used by counselors to help students with the process of career decision-making, unfortunately, criticisms such as those mentioned in the SCANS Report (1992) have been leveled against some of these types of tests. According to the SCANS Report, critics have repeatedly argued that some tests might:

- Label, sort, and select individuals without regard to whether the tests promote learning.
- Harm test takers by pitting students against one another in ways that result in long-lasting labels like "smart" and "dumb."
- Distort the educational process, because instruction is often driven by the testing process.

Although some traditional tests do have limitations, according to Herr (1988), "in engaging in career assessment, counselors must remember that many critics object to the influence which any form of testing exerts in this society. In part, this criticism evolves from observations that some counselors and other test users attribute an inappropriate amount of confidence to the results of testing as 'objective' markers from which decisions can be made" (pp. 21–22). However, as evidenced by the educational reform movement, other types of assessments and activities may be needed in order to complement traditional tests and to provide educators with new understandings of how students learn and succeed (Farr & Farr, 1990, p. 13).

The Career Portfolio, which may be used to complement traditional tests, has become one of the cornerstones of the reform movement supported by both the Department of Labor's SCANS Report and the New Standards Project (1993). The New Standards Project, a grass roots partnership of states and large districts, calls for the development of a new kind of assessment system. "The New Standards Project assessment system will employ advanced forms of performance assessment, including portfolios, exhibitions, projects, and timed performance examinations, all based on the use of real-life tasks that students are asked to do alone or in groups" (New Standards Project, 1993, p. 4). With the Career Portfolio, the student not only completes or demonstrates a desired behavior, but he or she also does it in a real-life context. Another important feature of the Career Portfolio is that the control of the portfolio usually rests with the student. That is, the student, with or without the guidance of a counselor and/or teacher, often determines what is to be included in his or her own portfolio and under what conditions supportive evidence, such as projects, reports, and sample papers are generated (Meyer, 1992, p. 92). Because the student is involved in putting his or her best foot forward, the portfolio process, in most cases, becomes a less threatening way of assessing one's own work, and the student is challenged to do his or her best work for the sake of the portfolio (Hinojosa, 1992, p. 2).

One purpose of Career Portfolios, much like some traditional assessments, is to assess learning in order to show evidence of growth, progress, and achievement in such areas as knowledge, attitude, and skills. Each portfolio, containing samples of work the student has produced throughout the year or several years, will assist teachers, counselors, and parents in determining how the student's thinking has progressed throughout the year(s). Therefore, through the use of the portfolio, an assessment of the student's progress can take place more naturally.

Career Portfolios may also be used to aid in the development of curriculum, guide future educational decisions, and evaluate the quality of the existing curriculum. Unlike some traditional assessments, however, the purposes of Career Portfolios may also include fostering personal responsibility; enhancing self-esteem; assisting in goal setting; allowing opportunities for collaborative work, and fostering the development of personal qualities, such as critical thinking, self-assessment, and self-direction. Through the use of the portfolio, students are challenged to set realistic goals for themselves and are challenged to meet these goals and to do their best work. They also become informed and thoughtful evaluators of their own learning because they are given opportunities to grow and to change their minds as they learn and experience new things. As a result, portfolios often avoid some of the limitations of traditional assessments because, through the portfolio process, "students can become actively engaged in their own educations, gaining a sense of pride and ownership of their work that cannot be equaled by traditional assessment methods" (Hinojosa, 1992, p. 2).

USE IN SCHOOL SETTINGS

Career Portfolios can be implemented in a variety of settings and modified to meet the needs of students at various educational levels. The best method, however, will be determined by the age and maturity of the students. Therefore, the key to the successful use of Career Portfolios in school settings will depend upon the career-related experiences that parallel the students' maturational levels and motivate them to learn about themselves and about their relationship to the world of work (*Guide to a Career Portfolio*, 1993, p. 12).

In most cases, however, the learning that is assessed in the Career Portfolio is based upon new understandings regarding the changing goals of education to include the integration of the competencies and skills required for the workplace into the entire school curriculum. Examples of portfolio projects that focus heavily upon the competencies and skills needed for the workplace include the *Career Development Portfolio*, developed by the National Occupational Information Coordinating Committee (NOICC) (1992) in conjunction with the American School Counselor Association (ASCA), and the *Employability Skills Portfolio*, developed by the Michigan Educational Assessment Program (1991).

The Career Development Portfolio, piloted in Maine, North Carolina, Oregon, Pennsylvania, and Utah in 1992–93, was developed in order to help students make wise, realistic, personal, educational and career decisions. It was also developed in order to help students learn to take responsibility for their own career development. The portfolio, entitled *Get a Life: Your Personal Planning Portfolio*, is a personalized career-planning journal divided into competency and personal files. The competency files list the National Career Development Guidelines as career-development competency statements cross-referenced to the workplace competencies, as outlined in the SCANS Report, *What Work Requires of Schools* (1991). When implementing this portfolio, the school is responsible for providing the opportunities for students to achieve the competencies that are outlined in *Get a Life: Your Personal Planning Portfolio*. This is accomplished through a comprehensive, developmental school career guidance and counseling program that helps students relate such information as their educational plans, career interests, achievements, aptitudes, goals, competencies, and skills to the world of work and to the workplace of the future. Information designed to assist the school with these tasks can be found in the *Facilitator's Manual* accompanying the portfolio. A *User's Guide* is also available for counselors and teachers. This Guide is designed to help counselors and teachers assist students in the use of their portfolio.

The Employability Skills Portfolio, developed by the Michigan Employability Skills Task Force and now implemented by law statewide in grades 8 through 12, is designed to help students discover, develop, and document their employability skills. The Michigan Employability Skills Task Force, comprised of leading state employees, met in 1987 to identify a profile of skills critical across a broad array of jobs and to develop a portfolio for students to use in documenting the attainment of these skills. These skills included academic, personal management, and teamwork. The committee also developed support materials for students to use when discovering, developing, and documenting their employability skills. In 1990, 22 local school districts in Michigan received grants to implement and pilot this project. In most cases, these pilot districts integrated the Employability Skills Portfolio project into on-going involvements with the business community, which included such activities as job shadowing, field trips, presentations, and job-placement interviews.

When implementing this portfolio in the Michigan schools, specific decisions about what was to be included in each student's portfolio were left up to each local school district, and several exceptional models developed during piloting of the portfolios could be adopted or adapted for use. Therefore, local districts set their own specific competency-based goals, objectives, and expectations for students, and, much like NOICC's Career Development Portfolio project, were responsible for providing opportunities for students to achieve the goals outlined in the portfolio. In 1993–1994, a "benchmarking process" allowed for the evaluation of the skills demonstrated in the portfolio.

In both the Career Development Portfolio and the Employability Skills Portfolio projects, the students were encouraged to take responsibility for their own Career Portfolio, thereby learning a useful lesson for lifelong career development. Upon graduation from high school, the portfolio becomes the property of the student and can be used for the purposes of educational or occupational placement.

As evidenced above, in order for Career Portfolios to be implemented successfully in a variety of school settings, local school districts, as well as counselors and teachers, need to continue to provide opportunities for all students to achieve the competencies and skills required in the workplace. Educators will also continue to need training in order to understand the importance of employability skills for all students and to learn better ways to integrate these employability skills into the entire curriculum. In most cases, this will involve the input of educators, employers, parents, and the local community.

ENGAGING STUDENTS IN THE PROCESS OF SELF-ASSESSMENT

Career Portfolios present excellent opportunities for engaging students in the process of self-assessment, thereby empowering them as learners. When students are given opportunities to decide what goes into their own portfolios, they will begin to develop the attitudes, skills, and habits of self-direction and self-assessment. The portfolio will then become a laboratory whereby students construct meaning from their actual experiences. Therefore, the key to helping students evaluate the contents of their own Career Portfolio does not center upon having them assign a grade or a label to the entire portfolio. Rather, the focus centers upon allowing them the opportunity to reflect upon what they have selected to be included in their Career Portfolios and how their selections relate to their career goals. This process will allow them to gain a better understanding of themselves. As studies have shown, when students are actively involved in assessing and assigning meaning to their own work and setting goals for themselves, they are more responsible for their own learning, and they are more motivated to achieve their career goals (Paulson, et al., 1992, p. 7).

Some students, however, cannot successfully engage in the process of self-assessment or begin to evaluate themselves in-depth until they are given some guidance to do so. William Glasser (1992), in his bulletin, "Additional Thoughts on Self-Evaluation," points out that students often see the value of assessing their own work, but they are unsure as to what they should actively do or what self-assessment actually means. For example, for some students the concept of self-assessment simply means assigning a letter grade (A, B, C, D) to one's own work. However, while the letter grade seems to have some meaning to teachers and parents, it often tends to have little meaning to some students. In fact, as Glasser points out, as most of the systems are set up now, students receive a grade or a few written comments from a teacher, but they often have little or no idea where the grade came from or what the comments actually mean. Even if the grades are high, some students tend to concentrate more on getting through school than on truly learning what was covered. They will go from assignment to assignment with little improvement or little understanding about what learning is all about. As a result, when some students are asked to assess or evaluate their own portfolio work, they will take a quick look at the materials they have included in their portfolio and assign a high grade to the portfolio whether they deserve one or not. To some students, the assigning of a grade has very little meaning and very little to do with the quality of the work they have evaluated. Therefore, if students are to become thoughtful evaluators of what they have included in their own career portfolio, the counselor and/or teacher will need to become actively involved in teaching or guiding them through the process of self-assessment. In fact, for the counselor, helping students to understand the process of self-assessment becomes as important as the Career Portfolio itself. It is through the self-assessment process that students gain opportunities to reflect truly upon their own ideas and learn what ideas, projects and reports are important enough to be included in their portfolio (Glasser, 1992, p. 2). One example of how self-assessment is included in the Career Portfolio process involves Michigan's Employability Skills Portfolio. As a part of the portfolio process, students in Michigan are encouraged to include in their Career Portfolio a reflective piece that analyzes what each item in their portfolios demonstrates about their developing employability skills.

Holding one-on-one conferences with students to discuss their Career Portfolio is one way to help them learn the process of self-assessment. An example of a portfolio model that uses consultations with students as part of the portfolio process is the *California Learning Record* (CLR) (1993). The CLR is a portfolio project, pilot-tested by California teachers since 1987, that yields information about students' annual academic progress. This progress is based upon the students' completion of various subject-area authentic tasks and on teachers' consultations with parents and students. Therefore, central to the CLR is the teachers' ability to learn information about the students, such as their interests, past successes, and future goals. Using this knowledge, teachers make written observations about the contents of each portfolio and about each student's behavior in a range of settings, from one-on-one conferences to large group and peer group activities. Through discussing their written observations with students, the students learn how to apply sets of criteria to their own portfolio work. They also learn to monitor their own academic progress in terms of what they are learning in school.

When the CLR method is applied to Career Portfolios, the purpose of holding one-on-one conferences with students is to discuss the materials in the students' Career Portfolios, thereby guiding students through the process of self-assessment. In so doing, the counselor and/or teacher is given the opportunity to learn a great deal about the students' aptitudes, interests, competencies, skills, and career goals. With this knowledge, the counselor and/or teacher can ask open-ended questions designed to help students evaluate such areas as their academic performance, workplace competencies, and skills and to share in the responsibility for any needed improvement in these areas. In addition, the counselor's and/or teacher's questions should focus upon helping students to reflect upon their long-term and short-term goals and to discuss these goals in terms of their successes and failures in the classroom, extracurricular activities, and work experiences. The questions asked should allow students the opportunity to highlight their achievements and to discuss why certain projects and reports were selected to be included in their Career Portfolios and to express their feelings about the work and how it relates to their career goals (*Guide to a Career Portfolio*, 1993, pp. 22–24). As each student is challenged to do his or her best work and to include it in the portfolio, the burden of responsibility for academic learning, as well as learning about oneself, becomes the responsibility of the student—not the counselor, teacher, or educational system.

However, in order for Career Portfolio one-on-one conferences to be successful in enabling students to engage in the process of self-assessment, the counselor and/or teacher must be willing to value the students' independence and perceive students as equal partners in their own education. This allows the students to have input into what is needed in order for them to meet their goals and to graduate from school with the skills and competencies necessary to be successful. The end result of engaging students in the process of self-assessment will be a collaborative assessment that serves to strengthen the bond between student and counselor and/or teacher, thereby establishing both the student and counselor and/or teacher as partners in learning (Valencia, 1990, p. 338).

SOME CONCERNS

Although many educators are excited about the Career Portfolio concept because it may serve to detail students' levels of achievement and broaden the assessment of students' work, there are some concerns about the possible use of Career Portfolios in lieu of traditional standardized tests. In some cases, Career Portfolios do not include the results of traditional standardized tests, and some educators express a fear that if these types of Career Portfolios are intended to be used in lieu of traditional standardized tests, they may not adequately prepare students for the realities of college and employment testing. For example, despite the changing attitudes concerning the need for new types of assessments, when considering students for enrollment in a college or university, most colleges and universities still rely heavily upon the results of traditional standardized multiple-choice tests. Therefore, those schools considering implementing Career Portfolios in lieu of traditional standardized tests should seek local college and university, as well as employer, involvement in the process. One example of a college that uses a portfolio as an option for admission into its program is Lewis and Clark College, Portland, Oregon. At Lewis and Clark, a student applying for admission may present a portfolio that demonstrates intellectual growth as well as the ability to write clearly. The student's portfolio will include such materials as projects, papers, transcripts, and letters of recommendation. The portfolio must also include a letter from a principal and/or high school counselor certifying that the contents of the portfolio are the student's own. However, in many cases, if Career Portfolios are going to be used to help students apply for admission into a particular educational and/or training program or to help students obtain employment, the portfolios should not operate solo; rather, they should be combined with other assessments in order to help postsecondary educational and/or training programs, as well as businesses, make the best use of the information. "If the goal of assessment is a valid and reliable picture of students' understanding and achievement, evidence must come from a variety of sources" (*Curriculum and Evaluation Standards for School Mathematics*, 1989, p. 198).

Career Portfolios also come with no guarantees. Unlike many traditional standardized tests, there are usually no nationally normed scores or grade-level equivalents. In other words, with many traditional tests, the questions, scoring procedures, and administration conditions are standardized in order to enhance the comparability of scores from question to question, scorer to scorer, and subject to subject (Moss, et al., 1992, p. 13). Although some portfolios may be standardized in some respects, many teachers, when using portfolios in the classroom, assess student performance according to certain performance standards, thereby allowing students to demonstrate how well they can accomplish the entire portfolio task. On the basis of teacher evaluations of the work included in the portfolios, the teachers may then assess student learning using certain generalized terms. For example, one approach to assessing portfolios involves the evaluation of only one dimension or aspect of the portfolios at a time. These dimensions might include variety of work contained in the portfolios, attitudes, interests, and growth over time. The portfolios are then sorted by the teacher into piles representing ''high,'' ''adequate,'' and ''low'' performance on the dimension that is being assessed (Farr & Farr, 1990, p. 66). The terms ''high,'' ''adequate,'' or ''low,'' however, are not intended to be used as labels for measuring the students' successes or failures; rather, they are intended to be used as aids in helping the students continue to progress academically or to reach their goals.

Many educators are also concerned about the way in which Career Portfolios might be evaluated in terms of performance standards and the different viewpoints some educators may have concerning what is important and what should be included in Career Portfolios. For example, according to a report issued by the Michigan Department of Education (1991), even though the National Council on Education Standards and Testing has stated that workplace competencies and skills should be integrated into the national standards and into assessments, some educators may have limited knowledge concerning the skills required by modern industry. Therefore, they may have little or no basis for understanding the documentation that may be required in students' Career Portfolios. As a result, if Career Portfolios are going to be used appropriately, schools will need more professional development programs designed to train counselors and teachers in all methods and strategies of assessment, and they will also need more employer involvement in the planning and implementation of the Career Portfolios. According to one report issued by the Michigan Department of Education (1991), stronger business involvement is crucial to the success of Career Portfolios. It is crucial at the classroom level in helping to raise teacher awareness of the students' need for employability skills, at the community level with employer validation of the portfolio process and use in job interviewing, and at the school district level in helping to maintain employability and career awareness issues across the entire curriculum. Parents, adult mentors, business people, and community groups also need to be recognized as critical partners in helping educators aid students with the processes involving developing and documenting their skills. As an old African proverb says, ''It takes a whole village to educate one child.'' Counselors, for example, are challenged to help both parents and students understand that employment in America is in the process of a transformation that involves where work is done, who does it, and how it is done (Chew, 1993, p. 26).

Community-wide audit committees, composed of business people, superintendents, principals, teachers, counselors, and other experts should also be established in order to engage in periodic audits of the Career Portfolios. In order to ensure that appropriate standards are being followed, the committee should examine a sample of portfolios, look at the quality of the work included in the portfolios, and evaluate student, teacher, and counselor responses to the portfolio work (Moss et al., 1992, p. 20).

If Career Portfolios are to be used to measure academic gains or to document students' progress in certain educational and/or training programs, they will also need to represent an assessment model in which counselors and/or teachers and students are encouraged to make intellectual and creative choices that reflect the students' goals based upon certain established criteria. In other words, according to the SCANS Report (1992), one criterion for an effective assessment should include defining and communicating what is to be learned—that is, defining the outcomes, such as the SCANS foundation skills and workplace competencies, that are expected to be demonstrated in the knowledge and skills of the students. "These outcomes become, in effect, standards for all. A useful assessment, not only indicates success or failure in meeting the standards but also, identifies the degree of progress made in meeting them" (pp. 60–61). Therefore, counselors and/or teachers, when evaluating the contents of each Career Portfolio for assessment purposes, need to bring to the task a set of principles applied on a uniform basis. The criteria for evaluation might include content knowledge to be mastered, such as the skills and competencies needed for the workplace; behaviors to be demonstrated, such as teamwork skills; higher order thinking processes to be exhibited, such as problem solving and self-assessment; products to be created, such as writing samples, projects, and reports; and characteristics to be attained, such as values, work habits, work attitudes, and effort (Brantigan & McElliott, 1992, p. 22). However, when evaluating Career Portfolios, counselors and educators should keep in mind that the assessment of the portfolios is best based upon both the counselor's and student's interpretations of the student's own portfolio work. According to Moss, et al. (1992, p. 14) the narrative interpretations of the portfolio work, whether oral or written, supported by the actual student portfolio work, will serve to facilitate genuine understanding of the portfolio results.

IN CONCLUSION

Counselors and educators should look toward implementing Career Portfolios in a variety of school settings. They can be used to complement traditional assessments in order to enhance career guidance and counseling programs and help students make wise, realistic career decisions. When helping students make career decisions, counselors can use the portfolios to draw upon multiple evidences of learning because each Career Portfolio will tell a story—a story of each student's journey toward monitoring his or her own academic performance and achieving his or her own career goals.

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CHAPTER XIV

A Comparison of the Assessment Components of Fifteen Computer-Assisted Career Guidance Systems

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BACKGROUND

The purpose of this analysis is to highlight similarities and differences among the assessment components of 15 computer-assisted career guidance (CACG) systems so that practitioners, CACG system developers, policy makers, and researchers may make informed decisions concerning such systems. For the purposes of this analysis, a computer-assisted career guidance (CACG) system is defined as a system of interrelated computer-based components designed to facilitate self-assessment, the generation of occupational and educational alternatives, and the use of occupational, educational, and employment information. Such systems are often coupled with counseling interventions and various print and media-based support resources, and are used within an organization to assist individuals in making current career decisions as well as improving their capacity to make effective career decisions in the future.

Hopefully, by making it easier to examine the assessment features of CACG systems, professionals will be both better motivated and more capable of dealing with the complex evaluative considerations that undergird the selection of CACG systems for specific purposes and settings. The ultimate effectiveness of this analysis, therefore, can be measured by the willingness of professionals to

TABLE 1: COMPARISON OF ASSESSMENT COMPONENTS FOR HIGH SCHOOL, COLLEGE, AND ADULT SYSTEMS

Assessment[1]	CIS	CH	CHCT	CLECT	COIN	DCA	DHS	GIS 17	GIS II	KC	SP	VIS
On-line self-assessment[2]												
abilities/skills/activities	yes	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes
experiences	no	no	no	no	no	yes	yes	no	no	no	no	no
interests/fields of knowledge	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	no
life-career roles	no	no	no	no	no	yes	no	no	no	no	no	no
life transitions	no	no	no	no	no	yes	no	no	no	no	no	no
readiness for career choice	no	no	no	no	no	yes	yes	no	no	no	no	no
temperaments	yes	yes	yes	yes	no	no	no	no	no	yes	no	no
values	yes	no	no	no	no	yes	yes	yes	yes	no	yes	no
values clarification exercise	no	no	no	no	no	no	no	no	no	no	yes	no
Capacity to complete paper-and-pencil version of on-line assessment prior to computer use[3]	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	no	yes
Standardized tests admin. on-line[4]												
Harrington-O'Shea CDM	no	no	no	no	no	no	no	yes	yes	no	no	no
Temperament Survey	no	no	no	yes	no	no	no	no	no	no	no	no
UNIACT Interest Inventory	no	no	no	no	no	yes	yes	no	no	no	no	no
Capacity to input scores from paper-and-pencil administration of standardized instruments[5]												
ACT Career Planning Program	no	no	no	no	no	yes	yes	no	no	no	no	yes
ASSET	no	no	no	no	no	yes	yes	no	no	no	no	no
ASVAB	yes	yes	yes	yes	yes	yes	yes	no	no	yes	no	yes
Career Assessment Inventory	yes	no	no	no	no	yes	yes	yes	yes	no	no	yes
COPS	no	no	no	no	no	yes	yes	no	no	no	no	yes
Differential Aptitude Tests	yes	no	no	no	no	yes	yes	no	no	no	no	yes

GATB	yes	yes	yes	no	yes	no	no	no	no	no	no	no
Harrington-O'Shea CDM	no	no	no	no	no	yes	yes	yes	yes	no	no	yes
Kuder GIS	no	no	no	no	no	yes	yes	no	no	no	no	yes
OVIS II	no	no	no	no	no	yes	yes	no	no	no	no	yes
PLAN	no	no	no	no	no	yes	yes	no	no	no	no	yes
Self-Directed Search	yes	no	no	no	no	yes	yes	yes	yes	no	no	yes
Strong Interest Inventory	yes	no	no	no	no	yes	yes	yes	yes	no	no	yes
UNIACT Interest Inventory	no	no	no	no	no	yes	yes	no	no	no	no	yes
Capacity to deactivate assessment functions as part of the software configuration process	no	yes	yes	yes	no	no	no	no	no	no	no	no

Notes:

[1] Some CACG system content features are easy to identify, while other system content features are embedded within other features and are more difficult to locate. Software developers can provide assistance in locating specific system content features that are not readily apparent.

[2] The user reads descriptions of career variables and indicates personal preferences.

[3] Potentially reduces the amount of time the user spends at the computer.

[4] The user may complete a computer-administered version of a standardized paper-and-pencil instrument.

[5] The user may complete a paper-and-pencil administration of a standardized instrument prior to computer use.

CIS—Career Information System (University of Oregon, 1992) Operating in 13 states and one city with localized information. Specific information included may vary slightly from state to state.

CH—Choices (Careerware-ISM Systems Corporation, 1992)

CHCT—Choices CT [for Adults in Career Transitions (Careerware-ISM System Corporation, 1992)]

CLECT—MODULAR CLECT (Chronicle Guidance Publications, Inc., 1992)

COIN—COIN (COIN Educational Programs, 1992)

DCA—DISCOVER for Colleges and Adults, (American College Testing Program, 1992) A very similar version, DISCOVER for Colleges and Adults, (Special Version), is also available. Differences between these versions include lower reading level, reduced number of user characteristic categories required for "guidance approach" sign-on, localization options for sign-on process, and elimination of counselor reports that require personal data.

DHS—DISCOVER for High Schools (American College Testing Program, 1992)

GIS 17—Guidance Information System Version 17 (Riverside Publishing Company, 1992)

GIS II—Guidance Information System (GIS II) (Riverside Publishing Company, 1992)

KC—KANSAS CAREERS (Kansas State University, 1992)

SP—SIGI PLUS (Educational Testing Service, 1992)

VIS—VISIONS (American College Testing Program, 1992)

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commit the time and energy to move beyond basic surface-level evaluations to more theory-based, context-specific, comprehensive evaluations of CACG system performance. The ultimate beneficiaries of such an effort would be the millions of adolescents and adults who seek assistance each year in making career choices (Sampson & Reardon, 1990).

SOURCE OF INFORMATION

The following criteria were used in selecting CACG systems for inclusion in this analysis: 1) Provision of system components that address self-assessment, the generation of occupational alternatives, and the delivery of occupational information; and 2) Use as a computer-based career information delivery system in more than one state, territory, or city; or 3) Use in more than 500 sites in the United States.

The specific CACG systems included in this analysis are: 1) CIS (University of Oregon, 1992), 2) Choices (Careerware: ISM Systems Corporation, 1992),

TABLE 2: COMPARISON OF ASSESSMENT COMPONENTS FOR JUNIOR HIGH/MIDDLE SCHOOL SYSTEMS

Assessment[1]	CHJr	COINJr	DJH
On-line self-assessment[2]			
abilities/skills/activities	yes	no	yes
interests/fields of knowledge	yes	no	yes
Capacity to complete paper-and-pencil version of on-line assessment prior to computer use[3]	yes	no	yes
Capacity to input scores from paper-and-pencil administration of standardized instruments[4]			
California Achievement Tests	no	no	yes
Comprehensive Tests of Basic Skills	no	no	yes
Iowa Tests of Basic Skills	no	no	yes
Metropolitan Achievement Test	no	no	yes
SRA Achievement Test	no	no	yes
Stanford Achievement Test	no	no	yes

Notes:

[1] Some CACG system content features are easy to identify, while other system content features are embedded within other features and are more difficult to locate. Software developers can provide assistance in locating specific system content features that are not readily apparent.

[2] The user reads descriptions of career variables and indicates personal preferences.

[3] Potentially reduces the amount of time the user spends at the computer.

[4] The user completes a paper-and-pencil administration of a standardized instrument prior to computer use.

CHJr—Choices Jr [Choices for Junior High and Middle Schools (Careerware-ISM Systems Corporation, 1992)]

COINJr—COIN Jr [COIN for Junior High and Middle Schools (COIN Educational Programs, 1992)]

DJH—DISCOVER for Junior High & Middle Schools (American College Testing Program, 1992)

3) Choices CT [for Adults in Career Transitions (Careerware: ISM Systems Corporation, 1992)], 4) Choices Jr (Careerware: ISM Systems Corporation, 1992), 5) MODULAR C-LECT (Chronicle Guidance Publications, Inc., 1992), 6) COIN (COIN Educational Products, 1992), 7) COIN Jr (COIN Educational Products, 1992), 8) DISCOVER for Colleges and Adults (American College Testing Program, 1992), 9) DISCOVER for High Schools (American College Testing Program, 1992), 10) DISCOVER for Junior High and Middle Schools (American College Testing Program, 1992), 11) GIS Version 17 (Riverside Publishing Company, 1992), 12) GIS II (Riverside Publishing Company, 1992), 13) Kansas Careers (Kansas State University, 1992), 14) SIGI PLUS (Educational Testing Service, 1992), and 15) VISIONS (American College Testing Program, 1992).

A nine-member team was assembled to conduct this analysis. The team met to review the previous feature-cost analysis and the purposes of the present research. Each member of the team agreed to be lead researcher for one or more systems. Each lead researcher used the features associated with their respective system(s) and reviewed support materials available from the CACG system developer(s). Telephone contacts were used to clarify specific questions related to features. The team then met as a group several times to discuss common criteria for features and to suggest the addition of new features or the deletion of previous features. In situations where different terminology was used by developers to represent similar features, a ``/'' mark was used to combine terms, for example, work tasks/activities. After data collection was completed, a second team member independently verified the accuracy of the data recorded by the lead researcher. A draft of the report was then sent to the developers of each system to identify factual errors and discuss the criteria for receiving a ``yes'' or ``no'' for specific features in question. Factual errors were then corrected and developer comments were taken into consideration by the team in completing the analysis. The team assumes responsibility for the quality of the analysis and related interpretations that are included.

LIMITATIONS

While every attempt has been made to be accurate, the reader should be aware of the inherent limitations of any methodology. First, the following analysis does not examine the effectiveness or desirability of the features identified for the 15 systems. A second limitation involves the use of a ``checklist'' approach in presenting the data. In an effort to present feature data in a succinct manner, a dichotomous yes-no ``checklist'' comparison of systems was used (i.e., ``Feature X: Does System A have it? Does System B?''). This approach effectively simplified a massive amount of data. However, potential problems occur when this methodology oversimplifies and obscures reality. Certain features cannot be adequately explained by this ``yes''-``no'' analysis. Also, the awarding of a ``no'' for any given system feature is not necessarily ``bad'' and the awarding of a ``yes'' for any given system feature is not necessarily ``good.'' In some cases a ``no'' may not indicate the lack of a relevant system feature. For example, if a system is not conceptually designed to allow the input of scores from paper-and-pencil administration of standardized instruments, then a ``yes'' for having a capability to input scores is irrelevant. Conversely, a ``yes'' may not indicate the presence of a relevant system feature. For example, if the system allows the input of an assessment instrument score that measures a construct that a professional views as inappropriate, then a "yes" for this system feature is irrelevant. Therefore, this comparative analysis is not a "score sheet," but a preliminary guide for further detailed consideration about whether a particular feature is important for a given clientele. It is hoped that although this method may blur a few trees, it can provide a useful map of the forest.

COMPARISON OF ASSESSMENT COMPONENTS

Table 1 provides CACG assessment component data on 12 CACG systems used in high school, college, employment service, vocational-technical school, library, rehabilitation, correctional, and military settings. Table 2 provides similar data on 3 CACG systems used in junior high/middle school settings. This analysis of CACG assessment components is based upon a general feature-cost analysis of CACG systems completed by Sampson, Reardon, Wilde, Norris, Peterson, Strausberger, Garis, Lenz, and Saunders (1993).

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CHAPTER XV

Additional Career Assessment Instruments

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In the previous section of this book, 52 major career assessment instruments are described and reviewed. In this chapter, an additional 245 instruments are briefly described and essential information such as publisher, date of publication, intended population and published reviews is provided. The entries for each instrument are grouped into logical categories that parallel, but are not identical to, those used to organize the major instrument reviews. While this chapter has approximately double the number of instruments covered in *A Counselor's Guide*, second edition, there are still many other instruments that could be appropriate for some career assessment application that are not included here. For example, types of instruments usually not included are those which primarily assess educational achievement, general intelligence, specific aptitude measures without broad applications and abnormal personality and adjustment. Also, although each instrument is included under only one category, in many cases it can be argued that it could also fit into one or more other categories. The User's Matrix provided in the appendices attempts to reflect this overlap of categories.

To facilitate the use of this chapter, the following key to the categories of information presented is provided:

- Type of Instrument. The categories used to organize the instruments in the order presented are:
  A. Multiple Aptitude, Achievement and Comprehensive Measures
  B. Specific Aptitude and Achievement Measures
  C. Interest Inventories
  D. Measures of Work Values, Satisfaction and Environments
  E. Card Sorts
  F. Career Development/Maturity Measures

G. Personality Measures
H. Instruments for Disabled and Disadvantaged Populations

- Name. The name of the instrument is listed first in boldface print. Common acronyms, when used, are provided in parentheses immediately following the name.
- Publisher. Only the name of the publisher is provided. The addresses and phone numbers (when available) of the publishers are listed in Appendix B. Additional information about the instruments can be obtained by writing to or calling the publishers.
- Date. The date given refers to the initial date the instrument was published and/or when it was last revised. A range of dates (e.g., 1960–93) signifies ongoing development and revision of the instrument during that time span. "No Date" indicates that the date of publication was unavailable.
- Population. The population refers to the group or groups of individuals for whom the publisher indicates the instrument is appropriate.
- Reference. Several of the major sources of instrument reviews are cited in an abbreviated form. An annotated bibliography of each source is presented in Appendix A. The key to the abbreviations is as follows.
  - —MMY refers to the *Mental Measurements Yearbooks*. The number immediately following denotes the volume number (Volumes 4 to 11). The number following the colon refers to the test number.
  - —TC is the abbreviation for *Test Critiques*. The number which follows is the volume number (Volumes 1 through 9). The number following the colon refers to the page number.
  - —T3 refers to *Tests*, Volume 3. The number following the colon is the page number.
  - —CG refers to *A Counselor's Guide to Vocational Guidance Instruments*—First Edition (1) or *A Counselor's Guide to Career Assessment Instruments*—Second Edition (2). The page number for the review follows the colon.
  - —MEG and MECD refer to *Measurement and Evaluation in Guidance* and *Measurement and Evaluation in Counseling and Development* respectively. The number following the colon refers to the month and year of the issue in which the review is found (e.g., 10/92 denotes October, 1992).
  - —B refers to either Botterbusch or Brown and several works published by the Materials Development Center at the University of Wisconsin-Stout. The number following the colon (85, 87 and/or 93) refers to the year of publication for *Testing and Test Modification* in Vocational Evaluation (Botterbusch, 1985), *Vocational Assessment and Evaluation Systems: A Comparison* (Botterbusch, 1987), or *Vocational Evaluation Systems and Software: A Consumer's Guide* (Brown, 1993).
- Brief Description. This section provides an overview of what is measured and includes the titles of some of the scales associated with each instrument. Additional comments are included for some instruments (e.g., to indicate a major use, special reports or support materials available, or training required for administration).

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A. MULTIPLE APTITUDE, ACHIEVEMENT AND COMPREHENSIVE MEASURES

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Desciption*
Aptitudes Bennett & McKnight 1986 High School		A self-report measure which allows students to estimate their aptitudes as measured by the GATB. Students view a filmstrip on aptitudes and complete a 10-item checklist. Includes directions for correlating scores with the 66 Worker Trait Groups.
Ball Aptitude Battery (BAB) Ball Foundation 1986 High School to Adults	MMY9:106 T3:869	Includes 12 tests designed to measure various aptitudes such as: clerical, writing speed, numerical computation, shape assembly, inductive reasoning, paper folding, analytical reasoning, etc. Additional subtests are available in paper/pencil or apparatus form only.
Career Exploration Profile (CEP) Precision People No Date High School to Adults	T3:813	Assesses career-related attitudes, interests, and abilities. Can use self-estimated aptitudes or scores based on objective tests. Compatible with Holland interest code categories. Used in career exploration, counseling and training. Computer scored.
Career and Vocational Form of the SOI-LA Basic Test M & M Systems 1975 Adolescents to Adults	T3:787	Measures 24 cognitive abilities which predict career and vocational options. Consists of subtests taken from the SOI-LA Basic Test. Paper/pencil tests. Suitable for groups. Instructions for self-administration. Computer analysis available.
Career Programs Assessment (CPAt) American College Testing 1981 Adults		Measures both the entry-level and academic skills important to success in educational programs offered by career schools, colleges and other post-secondary institutions. Basic skills test include: Language, Reading, and Numerical.
Comprehensive Ability Battery (CAB) Institute for Personality and Ability Testing 1975–77 Grade 10 to Adults	MMY9:255 MMY8:484 T3:875	Consists of 4 test booklets containing 20 subtests, each designed to measure a primary ability factor related to performance in industrial settings. Examples of scores reported are: verbal and numerical ability, clerical speed and accuracy, memory span, etc.

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
ETSA Tests Employers' Tests & Services Associates 1957–90 Grade 10 to Adults	MMY11:139 TC9:219 T3:881	Measures general and specific job aptitudes through 8 different tests: general mental ability, office arithmetic, general clerical ability, stenographic skills, mechanical familiarity, mechanical knowledge, sales aptitude, and personal adjustment index.
Explore American College Testing 1992 Grade 8		The entry point into ACT's Educational Planning and Assessment System. Used to stimulate career exploration and to facilitate the development of a plan for the individual student's high school academic program. Includes four 30-minute multiple-choice tests in English, Mathematics, Reading, and Science Reasoning.
Flanagan Aptitude Classification Test (FACT) SRA/London House 1953 High School to Adults, Prospective Employees	T3:883 B:85	Designed to predict success in various occupational fields via composite occupational scores. Consists of 16 subtests such as: inspection, coding, memory, precision, assembly, scales, coordination, judgment and comprehension, arithmetic, patterns, components, tables, etc.
Flanagan Industrial Tests (FIT) SRA/London House 1960–75 Adults	MMY8:981 TC2:282 T3:884	Measures 18 aptitudes or job tasks involved in supervisory, technical, office, skilled, and entry-level job demands. Designed for selection, placement, reassignment, or reclassification of employees.
Guilford-Zimmerman Aptitude Survey Sheridan Psychological Services 1947–56 Adults	MMY8:486	Measures the abilities of verbal comprehension, general reasoning, numerical operations, perceptual speed, spatial orientation, and spatial visualization. Each ability measure may be used independently. Designed for use by industrial psychologists, career counselors, and intelligence and aptitude researchers.
Hay Aptitude Test Battery Wonderlic Personnel Test 1947–82 Adults	MMY9:470 T3:934	Assesses clerical and numerical aptitude through 4 paper/pencil tests. Tests include: warm-up (which is not scored), number perception, name finding, and number series completion. Designed to aid in the selection of clerical workers. Hand scored.

Industrial Reading Test (IRT) The Psychological Corporation 1978 Grade 10 to Adults	MMY9:504 T3:886	Contains 9 reading passages and 38 test items on work-relevant topics to assess reading comprehension. Some passages depict sections of technical manual; others are written in the form of company memoranda. All passages are at the secondary reading level.
IPI Aptitude-Intelligence Test Series Industrial Psychology 1982–86 Adults	TC2:363 T3:887	Consists of various aptitude and personality tests such as: dexterity, blocks, parts, numbers, tools, judgments, fluency, sales, etc. Aids in employee selection in 28 job fields such as: computer programmer, dental technician, sales, clerk, etc.
Job Effectiveness Prediction System (JEPS) Life Office Management Association 1986 Adults	T3:894	Paper/pencil test which measures a variety of skills required for a wide range of clerical and technical/professional positions. Examples of subtests include: numerical ability, mathematical skill, spelling, etc. Used for selection/placement of employees in insurance companies.
JOBTAP II Educational Testing Service 1986 High School to Adults		A microcomputer-based job training assessment program that measures a wide range of basic work skills. A profile is combined with background information, work experience, and interest to form a career plan identifying job training programs which suit the individual's needs.
Missouri Aptitude and Career Information Inventory (MACII) Missouri Testing and Evaluation Service 1979 Grade 9 to 12	T3:829	Assesses verbal and quantitative aptitudes, and career interests. Combines a test which measures understanding of words and ability to perform fundamental number operations with a career interest measure. Users are asked to indicate occupational likes and dislikes through a list of over 250 titles.
Multidimensional Aptitude Battery (MAB) Sigma Assessment Systems 1982–84 Grade 10 to Adults	MMY10:202 MMY9:728 TC2:501 T3:57	Assesses aptitudes and intelligence through 5 verbal and 5 performance subtests. Yields a profile of scores. Can be individually or group administered using paper/pencil or IBM-compatible disk. Mail-in scoring generates narrative report.
National Career Aptitude System (NCAS) Career Passports 1990 Grade 11 to Adults		Assesses ability to learn and perform tasks required for various occupations. Yields printout of test results and descriptions of career clusters and occupations related to abilities. Test topics include: Business Situations, Clerical Speed and Accuracy, Logical Reasoning, etc.

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Plan American College Testing 1987 Grade 10		Formerly called P-ACT+, a part of ACT's Educational Planning and Assessment System which provides 10th graders with comprehensive information for educational and career planning. Comprised of an interest inventory, a Study Power Assessment, a student information section, and 4 tests of educational development.
Planning Career Goals (PCG) CTB Macmillan/McGraw-Hill 1975–76 Grade 8 to 12	MMY8:1019 T3:833 CG2:213 CG1:140	A 906-item set of paper/pencil tests that combine scores to aid in educational and career planning. Provides the following types of data: the individual's abilities, values, interests, career information, and career and educational plans.
Revised Beta Examination-Second Edition (BETA-II) The Psychological Corporation 1978 Adults	MMY9:1044 T3:979	Assesses mental abilities in individuals having limited or no reading skills. Consists of 6 tests: mazes, coding, paper form boards, picture completion, clerical checking, and picture absurdities. Can be group administered. Available in Spanish.
Scholastic Level Exam (SLE) Wonderlic Personnel Test 1937–88 Age 15 to Adults		A 50 question, 12-minute timed test of cognitive ability or aptitude for learning. Measures students' ability to understand instructions, keep up with classroom pace, solve problems and use occupational training on the job.
Schubert General Ability Battery (GAB) CTB Macmillan/McGraw-Hill 1986 Grade 10 to Adults	TC3:579 T3:597	Assesses intellectual abilities including verbal, arithmetic, and syllogistic measures of reasoning ability. The 4 subtests are designed to indicate individuals' levels of success and/or placement in school, college, and business.
Skills 2000 Educational Technologies 1993 High School to Adults		Consists of 4 software programs that are designed to survey, analyze, cluster and compare skills data from jobs, individuals, and training. Each survey takes approximately 2 to 3 hours to complete and can be accomplished on any MS DOS based computer.

Student Occupational Competency Achievement Testing (SOCAT) National Occupational Competency Testing Institute No Date High School and Community College	T3:306	Consists of many tests that assess achievement in vocational education programs and measure skill and knowledge in 26 vocational fields. Identifies curriculum strength and weakness, used for grade assignments, and evaluation of job applicants.
Success Skills 2000 Wilson Learning 1991 High School to Adults		A video-based, computer-scored test for corporate recruiting and the development of entry-level professionals across a variety of jobs in 4 major categories: engineering, professional/finance, supervision, and sales and marketing. Measures critical skills in 3 broad categories: applied problem solving, interpersonal effectiveness, and accountability.
System 2000 Valpar International Corporation 1991–94 High School to Adults		Computer software covering 9 basic areas: skills assessment, career exploration, basic skills, transfer of skills, job placement, interests, standardized tests, client tracking, and work hardening. Includes 14 modules, such as GOE interest survey, work history, etc.
System for Assessment and Group Evaluation (SAGE)/**Compute-A-Match** Train-Ease Corporation 1980–86 Age 15 to Adults, EMR, TMR, LD, Disadvantaged, Displaced Workers	T3:806 CG2:218 B:93	Matches aptitudes, educational level, attitudes, and temperament of individuals to jobs and training. Composed of 5 separate components: vocational aptitude battery, vocational interest inventory, measurement of general educational development, assessment of attitudes toward others in working environment, and assessment of temperament.
VOC-TECH Quick Screener (VTQS) CFKR Career Materials 1991 Grade 10 to Adults	T3:840	A screening tool that assesses career aptitudes, interest, and training plans. Aids in matching career goals with jobs, and identifies job options and training. Designed for non-college bound persons. Computer version available.
Watson-Glaser Critical Thinking Appraisal (WGCTA) The Psychological Corporation 1942–80 Adults	MMY9:1347 MMY8:822 TC3:682 T3:629	Measures 5 aspects of critical thinking: drawing sound inferences, recognizing assumptions, deductive reasoning, drawing conclusions, and evaluating arguments. The 80 items contain content that may be controversial, thereby providing a measure of the extent of bias effect on the ability to think critically.

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Wesman Personnel Classification Test (PCT) The Psychological Corporation 1965 Adults	TC3:711 T3:926	Measures 2 major aspects of mental ability: verbal reasoning and numerical ability. Verbal items are analogies and numerical items include basic math skills and understanding of quantitative relationships. Aids in the selection of sales people and middle management personnel.
Western Personnel Tests (WPT) Western Psychological Services 1962–72 Adults	TC3:714 T3:981	Five-minute general intelligence test used in personnel screening in professional, college, clerical, skilled, and unskilled populations. Available in English and Spanish in 4 equivalent forms. Administered manually or on IBM compatible disk.
The Wonderlic Personnel Test Western Psychological Services 1959–87 Adults	MMY11:475 MMY9:1385 TC1:769 T3:927	Yields a single score that predicts job applicants' ability to learn on the job, understand directions, innovations, and routine tolerance. Available in 6 equivalent forms. May be individually or group administered by a trained clerk. Includes recommended cut-off scores for various occupations.
Word and Number Assessment Inventory (WNAI) NCS Assessments 1976–77 Grade 9 to Adults	T3:	Yields 3 scores: verbal, mathematical, and total. Compares these scores with those of individuals at various educational levels and in a number of occupations. Provides career information relevant to the scores, and offers suggestions for improving word and number skills.
Work Content Skills Inventory Strategic Career Services 1982 Adults		Contains 300 specific work-content skills in several occupational areas such as general management, human resources, leadership and motivation, communications, public relations, banking, accounting, etc. Useful in understanding an individual's performance capabilities.

B. SPECIFIC APTITUDE AND ACHIEVEMENT MEASURES

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Bennett Hand Tool Dexterity Test (BHTDT) The Psychological Corporation 1981 High School to Adults		Designed to measure manual dexterity and gross motor coordination. Subject removes 12 bolts from one vertical board and places them on another. Task requires the use of four tools: 2 open end wrenches, an adjustable wrench, and a screwdriver.
Bennett Mechanical Comprehension Test (BMCT) The Psychological Corporation 1940–80 Adults	MMY10:10 TC8:4 T3:1064	Assesses ability to understand physical and mechanical principles. The 68 test items can be group administered by company personnel or by optional tape recordings. Two equivalent forms available. Correlates score with DOT job categories.
Clerical Abilities Battery (CAB) The Psychological Corporation 1987 Adults	MMY11:71	Measures filing, proofreading, and mathematical skills. Tests ability to copy and compare information, use tables, and reason with numbers. The 7 tests can be administered separately or as a total battery. Available in 2 forms: A-industry, B-schools.
Clerical Skills Series (CSS) CTB Macmillan/McGraw-Hill 1966–77 Age 16 to Adults	T3:930	Consists of 10 tests to assess verbal and nonverbal abilities. The tests include: filing, arithmetic, clerical speed and accuracy, coding, eye-hand accuracy, grammar and punctuation, spelling, spelling vocabulary, vocabulary, and word fluency. Designed for pre-employment screening.
Computer Aptitude, Literacy, and Interest Profile (CALIP) PRO-Ed 1984 Adults	MMY10:72 MMY9:259 TC7:131 T3:787	Assesses computer aptitude, literacy, and interests. Many of the 138 items on this paper/pencil test are visual. Includes 6 subtests such as logic structures, computer literacy, estimation, etc. Generates a single aptitude score. May be used with persons with learning disabilities.
Computer Competence Tests (CCT) The Psychological Corporation 1986 Adults	MMY10:73 T3:272	Measures knowledge of computer history, operations, and application of computer technology. Based on generic computer knowledge. Uses a multiple-choice format for 5 test modules: development and impact, computer operations I and II, and applications I and II.

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Computer Operator Aptitude Battery (COAB) SRA/London House 1974 Computer Operator Applicants and Trainees	T3:952 B:85	Consists of 3 subtests: sequence recognition, format checking, and logical thinking. Scores from subtests combine to predict job performance of computer operators and to identify those applicants with the potential to succeed as a computer operator.
Computer Programmer Aptitude Battery (CPAB) SRA/London House 1964–85 Computer Programmer Trainees	MMY11:85 T3:953 B:85	Designed to assess an individual's potential to succeed as a computer programmer. Consists of 5 aptitude subtests: verbal meaning, reasoning, letter series, number ability, and diagramming. Oriented for both computer-experienced and inexperienced students
Crawford Small Parts Dexterity Test (CSPDT) The Psychological Corporation 1946–56 High School to Adults	T3:1065	Measures eye-hand coordination and fine finger dexterity in two parts. Part I-Subject uses tweezers to insert pins in close-fitting holes, and then places collars on the pins. Part II-Subject places small screws in holes by hand, and then uses a screwdriver to screw them down.
Customer Service Skills Assessment Program Wilson Learning 1989 High School to Adults		A video-based, computer-scored diagnostic system that focuses on the key functions of the customer service job. Includes a series of multiple-choice questions that are job-relevant and that provide a standardized assessment of a candidate's ability to do the job.
Dvorine Color Vision Test The Psychological Corporation 1958 General Population	T3:725	Designed to identify defective color vision. Consists of 2 parts that determine type and degree of vision defect. Each plate features a design of colored dots against a background of contrasting dots which appear shapeless to the colorblind.
General Clerical Test (GCT) The Psychological Corporation 1944–88 Adults	MMY8:1033 TC3:296 T3:933	Assesses abilities needed for many higher level administrative and paraprofessional positions. Consists of 9 tests which yield 3 ability scores: clerical speed and accuracy, numerical ability, and verbal ability.
Intuitive Mechanics SRA/London House 1984 Adults	T3:1066	Paper/pencil test that measures the ability to understand mechanical relationships or to visualize internal movement in a mechanical system. Used in vocational counseling or personnel selection to identify individuals with high mechanical interest and ability.

Manipulative Aptitudes Test (MAT) Western Psychological Services 1967 Grade 9 to Adults	MMY8:1040	Uses rectangular plexiglass board with sockets and a T-bar to measure eye-hand coordination and manual dexterity. Requires movement of hands, arms, and fingers in thrusting and twisting motions during 2 tasks, first using the preferred hand and then using both hands.
McQuarrie Test for Mechanical Ability (MTMA) CTB Macmillan/McGraw-Hill 1925–53 Grade 7 to Adults		Measures mechanical comprehension as indicated by the ability to visualize a mechanical system where there is internal movement or displacement of parts. Used in vocational counseling or personnel selection to identify individuals with high mechanical interest and ability.
Mechanical Movements SRA/London House 1984 Adults	T3:1067	Measures finger dexterity, eye-hand coordination, and visualization abilities required in office and factory tasks. May also be used by special educators to evaluate motor skills. Contains 7 subtests which can be used separately or in combination.
Minnesota Clerical Test (MCT) The Psychological Corporation 1933–79 Clerical Applicants	MMY9:713 MMY6:1040 T3:938	Designed to measure clerical aptitude. Focus is on perceptual speed and accuracy in 2 tasks: name comparison and number comparison. Each part consists of 100 pairs that the subject must identify as identical or dissimilar. Screens entry-level positions such as typists, clerks, etc.
Minnesota Rate of Manipulation Test, 1969 Edition (MRMT) American Guidance Service Test Division 1931–69 Grade 7 to Adults	MMY7:1046 T3:1067	Measures arm-hand dexterity using a form board with 60 round holes and 60 cylinders that fit into the holes. Consists of 5 different manipulative activities: placing, turning, displacing, one-hand turning, and two-hand turning. Also provides norms and instructions for the blind.
Minnesota Spatial Relations Test, Revised Edition (MSRT) American Guidance Service Test Division 1933–79 Grade 10 to Adults	MMY9:723 T3:614	Assesses spatial visualization ability and the ability to manipulate three-dimensional objects. This timed test consists of the transfer of blocks from one board to their proper place in the connected board as quickly as possible.
O'Conner Finger Dexterity Test Stoelting Company 1920–26 Age 14 to Adults	MMY6:1078 T3:1069	Designed to measure motor coordination and finger and manual dexterity. Consists of plate containing 100 holes arranged in 10 rows. Subject's task is to insert small metal pins, in groups of three, as rapidly as possible.

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
O'Conner Tweezer Dexterity Test Stoelting Company 1920–28 Age 14 to Adults	MMY6:1079 T3:1069	Designed to measure motor coordination and finger and manual dexterity. Consists of plate containing 100 holes arranged in 10 rows. Subject's task is to insert small metal pins, one by one, into each of the holes, using metal tweezers.
Office Skills Test SRA/London House 1977 Entry Level Applicants in the Business Field	MMY9:857 T3:939 B:85	Designed to measure clerical ability of entry level job applicants via 12 subtests: checking, coding, filing, form completion, grammar, numerical, oral directional, punctuation, reading comprehension, spelling, typing, and vocabulary.
Pennsylvania Bi-Manual Worksample American Guidance Service 1943–45 Age 16 to 39	T3:1070	Measures manual dexterity and eye-hand coordination in two parts: Assembly-requires manually assembling bolts and nuts, and then placing them in a hole in the board, and Disassembly-requires removing the assemblies from the hole, taking them apart, and returning the parts to their bins.
Perceptual Speed SRA/London House 1987 Adults	T3:939	Measures the ability to quickly identify similarities and differences in visual configuration. This 5-minute timed test can be used to aid in selecting personnel for occupations requiring rapid perception of inaccuracies in written material, numbers, or diagrams.
The Pin Test Psychological Assessment Resource 1989 Age 16 to 69	T3:117	Measures manual dexterity, speed, and visual acuity. Requires the individual to push a pin through a patterned set of holes, making indentations in the trial sheet. Consists of 4 30-second trials, 2 with each hand.
Purdue Pegboard SRA/London House 1941–68 Grade 9 to Adults	T3:1070	Measures gross movement of hands, fingers, and arms, and tip of finger dexterity. Consists of pegboard containing 2 rows of 25 holes into which pins are inserted individually with the right hand, left hand, and both hands.
Revised Minnesota Paper Form Board The Psychological Corporation 1970 Adults	MMY9:1045 T3:1071	Consists of 64 two-dimensional diagrams which assess spatial perception and mechanical-spatial ability as they relate to artistic and mechanical aptitudes. Aids in employee selection for occupations such as drafting, engineering, and electrical work.

Seashore-Bennett Stenographic Proficiency Test The Psychological Corporation 1956 Adults	T3:947	Duplicates tasks of a stenographer through dictation and transcription of notes into business letters. The recorded dictation ensures accurate timing and identical presentation to all examinees. Work samples yield a numerical score and can be examined for accuracy and appearance. Not sold to schools.
Short Employment Tests (SET) The Psychological Corporation 1972–78 Adults	MMY9:1124 T3:947 B:85	Designed to measure verbal, numerical, and clerical aptitudes via 3 tasks: recognize synonyms, perform arithmetic computations, and locate proper names in an alphabetical list and assign codes to the amount associated with each name.
Short Tests of Clerical Ability (STCA) SRA/London House 1959–73 Applicants for Office Positions	MMY8:1039 T3:948	Measures 7 clerical aptitudes and abilities: arithmetic, business vocabulary, checking, coding, directions—oral and written, filing, and language. Useful for selection and placement in various office jobs such as secretary, stenographer, office clerk, etc.
Space Relations (Paper Puzzles) SRA/London House 1984 Adults	T3:914	Used in vocational counseling or personnel selection to identify individuals with high mechanical interest and ability. Measures the ability to visually select a combination of flat pieces which fit together to cover a given two-dimensional space.
Space Thinking (Flags) SRA/London House 1984 Adults	T3:914	Measures the ability to visualize a rigid configuration when it is moved into different positions. This 5-minute timed test may be used to aid in identifying individuals with mechanical interest and ability.
SRA Clerical Aptitudes SRA/London House 1947 Grade 9 to Adults	T3:948	Measures 3 aptitudes necessary for job performance in office positions: vocabulary, arithmetic, and detail checking. Designed for assistance in selection of office personnel.
SRA Mechanical Aptitudes SRA/London House 1947 Grade 12 to Adults	T3:1072	Measures ability to learn mechanical skills in 3 areas: mechanical knowledge, space relations, and shop arithmetic. Designed for assistance in selection of entry-level applicants and trainees.

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
SRA Pictorial Reasoning Test (PRT) SRA/London House 1967–73 Age 14 to Adults	T3:980 B:85	Provides a general measure of the learning potential of individuals from diverse backgrounds with reading difficulties. Helpful in identifying an individual's potential for training and employment.
SRA Test of Mechanical Concepts SRA London House 1976 Grade 8 to Adults	MMY8:1045 T3:1072 B:85	Measures an individual's ability to visualize and comprehend basic mechanical and spatial interrelationships. Reports 4 scores: mechanical interrelationships, mechanical tools and devices, spatial relations, and total.
Stromberg Dexterity Test (SDT) The Psychological Corporation 1945–51 Trade School & Adults	MMY4:774 T3:1073	Designed to aid in choosing workers for jobs requiring speed and accuracy of arm and hand movement. Test consists of 54 red, blue, and yellow discs and a durable board containing 54 holes on one side. Subject is timed sorting discs by color, and placing them in the holes.
Typing Test for Business (TTB) The Psychological Corporation 1984 Adults	T3:949	Measures keyboarding skills in 5 categories: straight copy, business letters, revised manuscripts, numbers, and tables. Can be used to screen applicants for clerical positions. Not sold to schools.
Word Processing Test (WPT) The Psychological Corporation 1985 Adults	MMY10:392 TC7:639 T3:962	Tests for speed, accuracy and knowledge of word processing functions. Also measures input and edit capabilities on a Wang word processor. A selection or promotion tool with job applicants or current employees.
Word Processor Assessment Battery (WPAB) SRA/London House 1984 Word Processing Students & Adults	TC8:745 T3:963	Measures 2 operating abilities related to success in word processing occupations: inputting and editing material. Yields 4 scores: text input and edit, table input and edit. Each subtest scored by speed and accuracy. Used for job selection and placement. Two forms available.

C. INTEREST INVENTORIES

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Applied Biological and Agribusiness Interest Inventory The Interstate Printers and Publishers 1965–71 Grade 8	MMY8:990	Designed to measure a student's interests in biological and agribusiness occupations. Contains 100 items that assess specific interests such as: animals, plants, mechanics, business, etc.
Canadian Occupational Interest Inventory (COII) Nelson Canada Limited 1981–82 Adults	MMY9:188 T3:982	Measures adults' attitudes toward occupationally related activities. The following dichotomous factors are included: things vs. people, business contact vs. scientific, routine vs. creative, social vs. solitary, and prestige vs. production.
Career Area Interest Checklist Bennett & McKnight 1986 High School Seniors		Abbreviated version of the Career Interest Survey. Determines students' preferences for 12 career area interests such as: artistic, plant and animals, mechanical, industrial, selling, humanitarian, leading/influencing, etc. Students respond to 144 work activities.
Career Assessment Battery (CAB) Piney Mountain Press 1991 Grade 8 to Adults, Non-readers		A survey measure that assesses an individual's self-perception of interest, abilities and needs. Addresses 112 major worker trait clusters utilizing a video presentation. Users make occupational choices in areas such as: School Subjects, Work Load, Work Area, Work Situations, etc.
Career Compass Meridian Education Corporation 1988–92 Junior High to High School		Covers general career clusters, major work groups and specific occupations based on student responses to 70 work activity questions. Program printouts provide a career interest profile, additional information and a listing of related sample occupations for top 3 interest clusters.
Career Exploration Inventory (CEI) Jist Works, Inc. 1992 Adolescents to Adults		A self-scoring and self-interpreting measure which identifies the user's major interest clusters, explores a variety of work, leisure and educational options, and develops a career action plan.

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Career Exploration Series (CES) CFKR Career Materials, Inc. 1979–81 Grade 9 to Adults	MMY11:60 MMY9:196 T3:814	Designed to help students identify specific jobs that match their educational goals and interest areas. Focuses on 6 occupational areas, such as: agriculture-conservation-forestry, business-sales-management-clerical, consumer/home economics-related fields, etc.
Career Finder Wintergreen 1984–93 Grade 5 to Adults		A computer assessment of 18 items. Printout provides the 20 best matches from over 450 occupations. Gives current information on job duties, salary ranges, educational requirements, availability, and easy reference to the DOT.
Career Guidance Inventory Educational Guidance, Inc. 1972–79 Grade 7 to College	MMY11:61 MMY9:197 MMY8:996 T3:814	Measures comparative strength of students' interests in trades, services, and technologies. Scores reported for 14 engineering-related occupations (e.g., carpentry, masonry, technology), and 11 non-engineering-related occupations (e.g., communications, medical technology).
Career Interests Strategic Career Services 1982 Adults		Identifies an individual's interests and compares them to over 1,500 traditional and non-traditional, existing and emerging occupational fields. Also useful in exploring the possibilities of home-based businesses, independent consulting services and franchises.
Career Interests The Conover Company, Ltd. 1994 High School to Adults		Computerized program to assess individual interests. User responds to 60 forced-choice questions in the survey. Results include a bar graph for the Holland Codes and GOE scales. This information is tied directly into local jobs, resources, and education for employment.
Career Interest Survey Bennett & McKnight 1986 High School Students		Designed to measure students' likes and dislikes for 180 common work activities. Provides scores for 12 interest areas such as: scientific, protective, industrial, selling, accommodating, etc. Accompanied by Career Goal Worksheet to stimulate further career exploration.
Career Interest Test (CIT) Educational and Industrial Test Services Ltd. 1971–83 Adolescents to Adults	MMY9:198 T3:983	Measures vocational interests in 6 areas: outdoor-physical, scientific-theoretical, social service, aesthetic-literary, commercial-clerical, and practical-technical.

Career Key (CK) College of Education, North Carolina State 1993 High School to Adults	MECD:7/90	Self-administered instrument that assesses Holland codes and directs users to occupations related to their type. Provides explanation of Holland's theory and gives the volume/page number of identified occupations in the *Encyclopedia of Careers and Vocational Guidance*.
Career Orientation and Planning Profile (COPP) Career, Education, & Associates, Inc. 1982–91 Grade 7 to Adults		Provides a profile of one's ability to choose among occupations using 3 factors: true self, occupational requirements and opportunities, and exploratory experiences. Scores include: self-analysis, job analysis, occupational tryouts, occupational selection ability and personality tendency and appropriate occupation.
Career Planning System (CPS) The Conover Company, Ltd. 1985 Grade 9 to Adults		Software designed for individuals with limited experience in planning careers. Consists of 50 questions to identify interests. Provides printout of results and priorities for exploration. Includes a tracking system to assist with interest area changes and options. Requires Apple II System.
Career Targets COIN 1990–93 Middle School to High School		Provides assessment, career exploration and individual career plans. Includes 3 parts: a self-scored, self-administered inventory linking students' interests to 14 career clusters, an investigation of the world of work through exploration activities, and activities that emphasize the importance of education and the development of a high school plan.
Career and Vocational Interest Inventory Integrated Professional Systems No Date Adolescents to Adults	T3:812	Measures an individual's career and vocational interests by assessing over 30 basic vocational interests. Assists the user in making educational and/or career decisions. Provides scores on the six Holland themes. Computer scored.
College Major and Vocational Program Selector COIN 1990 Grade 11 to College Sophomores		Part I is a self-assessment that helps students to identify characteristics about themselves and relate personal characteristics to over 600 college majors and vocational programs. In Part II, students match themselves with a Personal Orientation and select the matching college majors or vocational programs.
Curtis Interest Scale Psychometric Affiliates 1959 Grade 9 to Adults	MMY6:1052 T3:984	Assesses interest in 10 areas: business, mechanics, applied arts, direct sales, production, science, entertainment, interpersonal, computation, and farming. Also yields a rating for the desire for responsibility.

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Educational Interest Inventory, Revised Edition (EII) Educational Guidance, Inc. 1962–77 Grade 10 to Adults	MMY11:123 MMY9:377 MMY8:1002 MMY7:1017 T3:821	Measures interest in formal, post-secondary educational programs. Includes 235 forced-choice items. Consists of 47 scales: agriculture sciences, engineering, foreign language, health sciences, psychology, law, home economics, etc. Paper/pencil version only.
Emerging Occupations Interest Inventory CFKR Career Materials, Inc. 1986 Junior High School to Adults		Computer program that matches an individual's interests against the characteristics of nearly 100 occupations. A specific occupation for which the individual is best suited is indicated at the conclusion. User is referred to accompanying guidebook which provides in-depth information regarding various occupations. IBM/Apple.
Experience Exploration Chronicle Guidance Publications 1981 Grade 8 to Adults		Identifies potential occupations by assessing a person's work experiences and interests in 10 occupational areas: outdoor, mechanical, computation, scientific, persuasive, artistic, literary, musical, social service, and clerical.
Explore the World of Work (E-WOW) CFKR Career Materials, Inc. 1991 Adults	T3:821	Designed as a quick assessment using 36 graphics: 24 work activities and 12 work values. Developed for adult retraining and reentry programs. This instrument is a pictorial form of JOB-O to accommodate low reading levels. Available in Spanish.
Gordon Occupational Checklist II The Psychological Corporation 1961–81 Grade 8 to Adults	MMY9:443 MMY7:1019 T3:822	Designed to measure areas of job interests for individuals seeking education and job training below the college level. Includes 6 broad vocational interest categories: business, arts, outdoors, technical-mechanical, technical-industrial and service.
Group Interest Sort The Conover Company, Ltd. 1987 Elementary Grades, Non-readers		Consists of 50 questions presented in a multi-media format: audiovisual, print, and computer-based. Utilizes activities rather than job titles. Intended for use with individuals who know little about the world of work.

Guilford-Zimmerman Interest Inventory Consulting Psychologists Press, Inc. 1963–89 Adults		Assesses career interests and personal values. A 150-item inventory which aids in job searches by determination of areas compatible with interests and values. This self-scoring instrument yields scores on 10 scales.
Hackman-Gaither Interest Inventory Psychological Service Center of Philadelphia 1968 Grade 7 to Adults		Assesses an individual's vocational interests and preferences in the following areas: business, sales, science, art, health and welfare, business clerical, mechanical, service, and outdoor activities.
High School Career-Course Planner CFKR Career Materials, Inc. 1990 Adolescents	T3:824	Used to evaluate career interest and develop a course plan that is consistent with self-assessed career goals. Measures interests in 6 occupational areas: working with tools, working with people, creating new things, solving problems, and doing physical work.
How Well Do You Know Your Interests? Psychologists and Educators Inc. 1974 Grade 10 to Adults	MMY11:165 T3:825	Designed to measure attitudes towards jobs, activities, things, and people in 10 vocational areas: business, mechanical, outdoor, service, research, amusement, visual art, literacy, music and general work attitudes.
Individual Career Exploration (ICE) Scholastic Testing Service 1976–86 Grade 3 to 12	MMY8:1581 T3:825	Assesses interests, experience, abilities, and ambitions of students and relates them to future occupations in 8 areas: service, business contact, organization, technology, outdoor, general science, culture, and arts and entertainment. Picture and verbal forms.
Inventory of Interests Guidance Testing Associates 1971 Adolescents to Adults	MMY9:525	Provides ratings for 136 occupations in 14 areas that parallel the 1965 edition of the DOT. Also contains information on 56 majors commonly found in college guides. Designed primarily for use as a counseling aid.
Judgement of Occupational Behavior-Orientation (JOB-O) CFKR Career Materials, Inc. 1978–93 Grade 4 to Adults	MMY10:16 MMY9:560 CG1:69	Uses a 9-item questionnaire to yield 9 scores: education, interest, inclusion, control, affection, physical activity, hands/tool/machinery, problem solving, and creating ideas. Scores are compared to 120 job titles. Designed to emphasize job awareness and promote job exploration. Three versions: grades 4–6, 7–10, and 10–adult.

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Kuder Career Development Inventory SRA/London House 1975–77 Grade 9 to 12, Out of School Youth, & Adults	MMY8:995 MMY9:995 CG1:136	Consists of Personal Data Form and Kuder General Interest Survey. Provides scores for 6 broad interest areas (e.g., technical/mechanical) at 3 levels (early, delayed, late). Also reports an Academic Level of Interest score.
Milwaukee Academic Interest Inventory Western Psychological Services 1973 Grade 12 to College	T3:829	Designed to aid college-bound seniors and college freshmen and sophomores in selecting a major. Assesses academic study interest in 6 major areas: physical science, healing occupations, behavioral science, economics, humanities-social studies, and elementary education.
Occupational Clues Jist Works, Inc. 1993 Adolescents to Adults		Used to clarify skills, experiences, values and other traits for good career decisions. Based on 6 checklists: occupational interests, work-related values, leisure activities, home activities, school and training subjects, and work experience. Long and short forms available.
Safran Student's Interest Inventory, Third Edition (SSII) Nelson Canada 1960–76 Grade 8 to 12	T3:834	Measures interests and generates individual scores in 7 areas: economic, technical, outdoor, service, humane, artistic, and scientific. Also provides 4 ability self-ratings: academic, mechanical, social, and clerical.
UNIACT IV American College Testing 1973–84 High School to Young Adults	MMY9:43 TC:1	A unisex interest inventory designed to eliminate sex-role stereotyping. Is a component of the ACT Career Planning Program and the Discover computer-based guidance system. Students respond to 90 activities grouped into 6 areas: science, creative arts, social service, business contact, business detail, and technical.
USES Interest Checklist U.S. Department of Labor 1979 Adults	MMY11:453 B:85	Users check "like," "dislike," or "uncertain" for 210 work activity statements. Designed for individuals with no stated work interest or who are unaware of the variety of available jobs/occupations. Used as a counseling tool; is not scored.

Vocational Interest, Experience & Skill Assessment (VIESA) American College Testing 1983–86 Grade 8 to Adults	MMY9:1338 T3:839 CG2:132	Composed of 8 basic units designed to aid individuals in expanding self-awareness, developing career awareness, identifying personally relevant career options and exploring and evaluating career option. Users relate information about themselves to 500 occupations.
Vocational Interest Inventory (VII) Western Psychological Services 1981 Grade 9 to College	MY9:1339 T3:838 CG2:137	Designed to help students isolate their strongest interests and relate them to specific education programs and occupations. Uses 112 forced-choice items to measure student's relative interest in 8 occupational areas. Must be machine scored.
Vocational Interest Profile Report Cambridge Career Products 1983 High School		A micro-computer program which analyzes students' choices of preferred work activities and ranks them according to 12 broad work categories. Provides a detailed report of 12 occupational categories and their descriptions, examples of jobs within each category, and references to the GOE and DOT. Available for Apple and IBM.
Vocational Research Interest Inventory (VRII) Vocational Research Institute 1985–92 High School to Adults	T3:840	Measures 12 interest areas tied to the GOE and DOT. Provides individuals with a profile analysis. Contains separate pre-vocational and vocational norms. Two versions: paper/pencil and software compatible with Apple/IBM personal computers. Available in Spanish.
What I Like To Do SRA/London House 1954–75 Grade 4 to 7	MMY8:709	Designed to identify the interests, and curricular and career preferences of children in the intermediate grades. Scores are provided for the following 4 broad areas: play, academic, arts, and occupations.
Work Activities Checklist Bennett & McKnight 1986 High School		Uses a "Work Activities" filmstrip, which describes 10 basic types of work activities. A 10-item checklist is completed to identify preferences for work activities. Provides relationships between activities and Worker Trait Groups of the DOT.
Work Activities Inventory Cambridge Career Products 1984 High School		A micro-computer program designed to aid students in their selection of an area of study related to their interests and goals. Contains a total of 30 areas from 6 work activity categories: doers, investigators, creators, organizers, influencers, and helpers.

D. MEASURES OF WORK VALUES, SATISFACTION AND ENVIRONMENTS

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
California Life Goals Evaluation Schedules Western Psychological Services 1969 Grade 10 to Adults	TC6:60 T3:161	Aids in differentiation of life goals from interests. Measures 10 life goals through 150 statements answered on a 5-point scale. Used in career planning, college counseling, and retirement adjustments. Takes about 30 minutes to administer; is easily scored and interpreted.
Career Orientation Placement and Evaluation Survey (COPES) Educational and Industrial Testing Service (EdITS) 1978 Grade 8 to Adults	T3:815 MECD:10/85	Measures the following 8 dimensions of personal values related to career evaluation and selection: investigative, practical, independent, leadership, orderliness, recognition, aesthetic, and social. Designed to increase self-awareness. Component of the COPSystem.
Career Values Scale Talico 1987–91 Adults		Aids in evaluation of career interests, goals, needs, and aspirations. The questionnaire consists of 80 items of preference alternatives in 4 categories: work environment, employment position, ambition, and career introspection.
Common-Metric Questionnaire (CMQ) The Psychological Corporation 1991 Adults		Job analysis questionnaire that provides a set of descriptors that is applicable to all types of job environments. Measures 4 dimensions: interpersonal, decision making, mechanical and physical activities, and work context. Can be used for selection test validation.
Employability Attitudes Educational Technologies 1973–93 Grade 9 to Adults	T3:1000	Assesses job-seeking and job-keeping attitudes via a self-paced audiovisual format. Identifies "attitudinal gaps" through comparison of individuals' responses and employers' expectations, and prescribes specific learning activities to help close those gaps.
Employment Readiness Scale Anthony M. Alfano 1973 Grade 9 to Adults		Measures work values to determine an individual's readiness for employment. Especially applicable for high school students planning to work in an unskilled or semi-skilled employment setting upon graduation.

Fleishman Job Analysis Survey (F-JAS) Consulting Psychologists Press 1992 Adults		A 74-item questionnaire used to determine ability requirements of jobs. Users respond to statements on a 7-point Likert scale. Covers the full range of human abilities such as: cognitive, psychomotor, etc. Self-scored.
Hall Occupational Orientation Inventory (HALL) Scholastic Testing Service 1968–89 Grade 3 to Adults	MMY8:1003 TC:1 T3:822 CG1:102 MEG:1/79	Measures psychological needs that are correlated to personality traits and job characteristics identified by the U.S. Dept. of Labor. Provides 22 scores such as: self-actualization, creativity, location concern, etc. Useful in broadening the individual's perceptions of potential and priorities. Four levels available.
Individual Style Survey (ISS) Psychometrics Canada Ltd. 1989 Grade 9 to Adults		Provides a structured activity for self and interpersonal development, with an emphasis on the unique way in which individuals respond to events and people in the environment. Includes a self-perception form and 3 forms to give to others to assess the user's style.
Job Descriptive Index, Revised (JDI Rev) Bowling Green State University 1975 Adults	MMY9:550 TC9:319 T3:1006	Provides an assessment of job satisfaction in any occupational field. Measures the following 5 components of satisfaction: work on present job, present pay, opportunities for promotion, supervision on present job, and people on present job.
Job Style Indicator (JSI) Career Research & Testing 1988–93 Adults		Contains 16 items which compare perceptions of a particular job with an individual's personal style. Reveals the preferred work style of a specific job and is useful in exploring the person-job match. Designed to complement the Personal Style Indicator.
Minnesota Job Description Questionnaire (MJDQ) Vocational Psychology Research 1967 Adults	TC6:350 T3:1012	Measures the working environment in terms of a profile of need-satisfaction characteristics. Aids in the person-job match of jobs along 21 reinforcer dimensions such as: variety, creativity, security, recognition, authority, independence, etc.
Ohio Work Values Inventory Bradford J. Fenner 1971–74 Grade 3 to Adults	MMY8:1017 MECD:10/85	An inventory designed to measure work values in 11 areas: altruism, object orientation, security, control, self-realization, independence, money, task satisfaction, solitude, ideas or data orientation, and prestige.

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Personal Style Indicator (PSI) Career Research & Testing 1988 Adults		A 16-item questionnaire that reveals personality and work style. Yields scores on behavioral, cognitive, affective and interpersonal dimensions. Contains detailed descriptions of 21 behavioral patterns. Self-administered and self-scored.
Position Analysis Questionnaire (PAQ) Consulting Psychologists Press 1969–92 Adults	TC5:326 T3:1020	Contains 189 job elements sampling what employees do to get their jobs done. Focus is on 6 behavioral areas: information input, mediation processes, work output, interpersonal activities, work situation and job context, and miscellaneous aspects.
Position Classification Inventory (PCI) Psychological Assessment Resource 1991 Adults	T3:1020	Uses Holland Codes to classify positions/occupations to assess person-job fit. Employees and supervisors complete an inventory which describes demands and skills required in a job by rating items on a 3-point scale. Both scores are compared to aid in determination of job fit.
Principles, Attitudes & Values for Employment (PAVE) Educational Technologies 1993 Grade 9 to Adults		A revised, computerized version of Employability Attitudes that provides assessment and instruction in 31 attitudes, values and ethics. Assessment categories include: personal feelings, social orientation, detail orientation, etc. Instruction provided in areas such as: effective communication, understanding self, motivation for work, etc.
Rokeach Value Survey Consulting Psychologists Press 1967–82 Age 11 to Adults	MMY9:1058 MMY8:660 TC1:549 T3:250	A self-scoring survey which contains items related to life-style and behavioral values. Utilizes a list of 18 terminal values and 18 instrumental values to aid in the determination of value priorities and assist in making life choices. A value's score is its rank.
Satisfaction Research Questionnaire (SRQ) Sigma Assessment Systems 1992 Adults		Measures job satisfaction using 6 scales which reflect work and work environments: challenge, comfort, co-workers, pay, resource adequacy, and total score. Respondents either agree or disagree with 80 statements. Machine-scored by publisher.
Study of Values (SOV) Riverside Publishing Company 1931–70 Grade 10 to Adults	MMY9:1205 MMY8:686 TC:1 T3:776	Measures the relative prominence of 6 basic values or personality motives in a forced choice format: theoretical, economic, aesthetic, social, political, and religious. Useful for student educational and vocational planning, guidance, personnel selection and research.

Survey of Interpersonal Values (SIV) SRA/London House 1960 Adolescents to Adults	TC2:759 T3:226	Measures 6 values involving relationships between people: support, conformity, recognition, independence, benevolence, and leadership. The 90 items are arranged in sets of 3 with each item ranked from "most" to "least" important.
Survey of Personal Values (SPV) SRA/London House 1964 Grade 10 to Adults	MMY10:354 TC2:773 T3:1030	Measures 6 values: practical mindedness, achievement, variety, decisiveness, orderliness, and goal orientation. This self-report consists of 90 items. Each item contains 3 of the 6 values which are ranked by selecting "most" or "least" important.
Work Motivation Inventory (WMI) Teleometrics International 1967–73 Adults	MMY8:1189 T3:1038	Yields 5 work maturation scores: basic creature comfort, safety and order, belonging and affiliation, ego-status, actualization, and self-expression. Separate measures are designed for managers and employees.
Work Values Inventory (WVI) Houghton Mifflin Co. 1968–70 Grade 7 to Adults	MMY8:1030 TC:2 T3:841 CG1:170	Assesses 15 values related to an individual's vocational satisfaction and success, such as: altruism, esthetics, intellectual stimulation, economic returns, security, supervisor relations, variety, and a way of life, etc. Designed for use in academic and vocational counseling.

E. CARD SORTS

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Career Values Card Sort Kit Career Research and Testing 1975–93 Adults		Contains 41 cards which describe work satisfaction such as: time freedom, precision work, power, technical competence, public contact, etc. Useful with job seekers, career changers, and those wishing to improve their present jobs. Includes guidelines for use.
College Major Card Sort College Major Card Sort 1980 Grade 7 to 12 & College		Provides students with an overall picture of common college majors, including information on background skill courses required in college and several occupational outlets for each major. Helpful in establishing a starting place for career exploration.
Deal-Me-In Career Systems 1985 High School to Adults		A deck of 52 playing cards used to explore interests. Different activities are illustrated on each card. Four color-coded "suits" correspond to four interest categories: people, data, things, ideas. Can play solitaire or gin rummy.
It's in the Cards Career Systems 1992 High School to Adults		Using the Deal-Me-In Card deck, a companion guide that contains examples of various uses. Covers 22 real job situations in 4 work areas: job search, job orientation, performance and reputation, and enrichment and enhancement.
Missouri Occupational Card Sort (MOCS) Career Planning and Placement Service 1980 Grade 11 & 12, College-bound, & Adults	CG1:148 MEG:10/81	Designed to broaden knowledge of self and of specific occupations. Encourages further self and career exploration by increasing the number of occupations under consideration. Contains 90 occupations divided into Holland codes.
Missouri Occupational Preference Inventory (MOPI) Human Systems Consultants 1980 High School to Adults	CG1:149	Designed to assist individuals in exploring potential careers, understanding reasons for occupational choices, and in planning further exploration. Consists of 180 occupations subdivided by educational requirements: high school, beyond high school, and college.

Motivated Skills Card Sort (MSCS) Career Research and Testing 1981 Grade 7 to Adults		Provides assessment of proficiency in, and motivation to use 48 skills. Primarily used to identify skills important to an individual's career satisfaction and success. Contains 48 skill cards and 8 category cards.
Non-Sexist Vocational Card Sort NSVCS 1974 High School to Adults	CG1:150 MEG:10/81	Examines the following areas that can limit perceived vocational options: feelings, values, needs, interests, fears, fantasies, life style preferences and the internalized sex, race, and class stereotypes. Contains 76 occupations.
Occupational Interest Card Sort (OICS) Career Research and Testing 1981 Grade 7 to Adults		Designed to assist individuals in identifying and clarifying preferred occupations. Contains 113 occupation cards, 5 category cards, and 9 supplementary activities designed to stimulate career exploration.
Occ-U-Sort CTB Macmillan/McGraw-Hill 1981 Grade 11 to Adults	MMY9:853 T3:830 CG1:151 MECD:10/82 MEG:10/81	Contains 180 occupations based on Holland's RIASEC typology. Designed to: stimulate career exploration, aid in the career decision-making process, stimulate individual thinking about motives for occupational choice, increase self-awareness, broaden options, and increase awareness of the world of work.
Slaney Vocational Card Sort R. B. Slaney 1978–81 High School to Adults		Provides insight into the relationship among interests, abilities, and personality traits and occupational selection. Contains 80 occupational titles selected from the Strong-Campbell Interest Inventory. Holland code is determined from client ranking of Holland types.
Vocational Insight and Exploration Kit (VIEK) Psychological Assessment Resources 1970–92 High School to Adults	MMY9:1337 MEG:10/81	Focuses on eliminating career indecision by broadening self-awareness and self-exploration, increasing the range of vocational options, and clarifying pros and cons of vocational alternatives.
Vo-Tech Major Card Sort College Major Card Sort 1982 Grade 7 to 12 & College		Provides students with an overview of common vo-tech majors, including information on the background courses and skills required, training opportunities, and occupational outlets for each major. Helpful in establishing a starting point for career exploration.

F. CAREER DEVELOPMENT/MATURITY MEASURES

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Career Action Inventory Career Systems 1988 Adults		A 75-question self-assessment inventory to determine what an individual is doing now about career planning and professional development. Includes a comprehensive discussion of inventory results and offers specific ideas for taking action to improve chances for success.
Career Attitudes and Strategies Inventory (CASI) Psychological Assessment Resource 1994 Adults		A 156-item self-report inventory that elicits attitudes, strategies, experience, and obstacles that influence career development. Consists of 9 scales such as: job satisfaction, work involvement, career worries, etc. A profile sheet summarizes report and charts scores.
Career Awareness Inventory (CAI) Scholastic Testing Service 1974–80 Grade 3 to 12	MMY11:59 MMY8:994 T3:842 CG1:115 MEG:7/80	Assesses students' occupational awareness in 7 areas: related occupations, contact with occupations, job characteristics, functions of occupations, grouping of occupations, work locations of occupations, and self-assessment of career awareness. Can be used to evaluate the effectiveness of career education programs.
Career Decision Profile Lawrence K. Jones 1989 High School to Adults		A 16-item paper/pencil measure of career decision status. Includes 6 subscales: decidedness, comfort, self clarity, knowledge about occupations and training, decisiveness, and career choice importance. Covers 3 dimensions: how decided one is on a career, comfort with this, and reasons for being undecided. Also available in Portuguese.
Career Development Profile Talico 1987 Adults	MECD:1/86	Assesses interests, ambitions, motivations, and goals among management and supervisory-level employees. Aids in identifying developmental needs and strategies for accomplishment of career goals.
Career Education Readiness Test Career Education Readiness Measurement and Research 1975 Grade K to 6		Measures students' attitudes and knowledge in the following 6 areas: sex-role stereotyping, intrinsic and extrinsic reasons for working, occupational esteem, awareness of vocational concepts, occupational responsibilities, and world-of-work vocabulary.

Career Leverage Inventory Career Systems 1983 Adults		A 35-question survey designed to help employees identify and assess their realistic career options. Provides new ways to think about career growth, how to prioritize and set career goals, and how to build back-up plans so individuals always have options.
Career Mastery Inventory (CMAS) Crites Career Consultants 1975–92 High School to Adults		Part 1 includes 90 behavioral and attitudinal statements that the user rates on a 7-point Likert scale. Involves 6 scales: organizational adaptability, position performance, work habits and attitudes, co-worker relationships, advancement, and career choice and plans. Part 2 consists of 20 statements of problem situations on the job.
Career Path Strategy Wilmington Press No Date Age 16 to Adults	T3:843	Evaluates an individual's career potential by assessing the following factors: mental ability, vocational interest, personality, ideal career and lifestyle, personal background data, cultural geographic and economic opportunities and limitations, preliminary career decision and strategy for achieving goals.
Career Skills Assessment Program The College Board 1978 Grade 9 to Adults	MMY9:202 CGI:126 MEG:10/80	Designed to measure the progress of groups or individuals in reaching career development goals and developing specific skills. Contains 6 subtests, such as self-evaluation, developmental skills, career awareness employment seeking skills, etc.
Comprehensive Career Assessment Scale Learning Concepts 1974 Grade 3 to 12, & Teachers	MMY8:999	Provides familiarity and interest scores for 15 areas, such as: business and office, construction, manufacturing, public service, etc. Helpful in assessing needs, planning curriculum for and/or evaluating career education programs.
Computerized Career Assessment and Planning Program (CCAPP) Cambridge Career Products 1989–93 High School		Provides students with career knowledge and teaches them decision-making skills in 4 areas: career assessment, selecting alternatives, career planning, and career exploration. Printouts contain information such as interest and skill summary, list of occupational clusters, job hunting plan, etc.

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Job Awareness Inventory (JAI) Mafex Associates 1980–81 Adolescents	MMY9:548 T3:844	Criterion-referenced test regarding knowledge of the world of work. Yields 5 scores: occupations, do you know how to, general information, interview actions, and a combined score. Available in 2 forms (A and B) which can be used for pre- and post-testing.
Job Search Assessment Educational Technologies No Date Adolescents to Adults	T3:845	Assesses an individual's understanding of the processes involved in successfully seeking and obtaining a job by measuring 20 areas related to job seeking. Examples include writing resumes, clarifying values, dealing with employment agencies, interviews, using newspapers, etc.
Knowledge of Occupations Test Edupac 1974 High School	MMY8:1008 T3:847	Assesses students' career knowledge in terms of earnings, licensing and certification, job description, employment trends, training, terminology, graphs and tools. Designed for use in individual counseling and in planning group career education programs.
My Vocational Situation (MVS) Consulting Psychologists Press 1980 Grade 9 to Adults	MMY9:738 TC2:509 T3:1014 CG2:186	Designed to identify 3 possible difficulties in making career decisions: lack of vocational identity, need for information or training, and environmental or personal barriers. Self-administered and hand-scored.
New Mexico Career Education Test Series Monitor 1973 Grade 9 to 12	MMY8:1013	Designed to assess specific learner objectives in career education. Contains the following components: attitude toward work, career planning, career oriented activities checklist, knowledge of occupations, job application procedures and career development.
Occupations and Career Information BOXSCORE Chronicle Guidance Publications 1973 Grade 7 to 12	MMY8:1015	Designed to measure basic knowledge of occupational information. Questions focus on the following type of information: work performed, entry requirements (e.g., schooling), licensing requirements, rewards (earnings), occupational outlook, and general information about the world of work.

G. PERSONALITY MEASURES

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Adult Personality Inventory (API) Institute for Personality and Ability Testing 1982–84 Age 16 to Adults	MMY9:54 MMY8:542 TC6:21 TC1:252 T3:154	Assesses individual differences in personality, interpersonal style, and career/life-style preferences. Consists of 324 items that measures 21 scales. The self-report inventory is computer scored. Designed for employee selection, counseling, and personal development programs.
The Career Suitability Profile Management Strategies 1984–93 Adults	T3:996	Based on 10 personality factors that measure fundamental personality characteristics which control career interests, abilities, and the capacity to perform. Computer-scored; provides a personalized 30-page description of results.
Edwards Personal Preference Schedule (EPPS) The Psychological Corporation 1953–59 Age 18 to Adults	MMY9:378 MMY8:542 TC1:252 T3:170	A forced-choice inventory based on Murray's Needs. Contains 225 pairs of comparison statements. Assesses 15 areas of needs and motives: abasement, achievement, affiliation, aggression, autonomy, change, deference, dominance, endurance, exhibition, heterosexuality, etc.
Exploring Career Options (ECO) NCS Assessments 1987 Adults Considering Career Change or Re-Entering the Job Market	T3:1002	Measures work-related personality characteristics, verbal and numerical abilities, personal style, and temperament and values that affect career interest and satisfaction. Recommends 10 to 15 career paths from a pool of 1,000 potential occupations.
Forer Vocational Survey: Men-Women Western Psychological Services 1957 Adolescents to Adults	T3:822	Designed to evaluate interpersonal behavior, attitudes towards people, work, and supervision and work dynamics. User completes sentence stems that measure reactions to specified situations, causes of feelings and actions, and vocational goals.
Fundamental Interpersonal Relations Orientation-Behavior (Firo-B) Consulting Psychologists Press 1967–89 High School to Adults	MMY9:416 T3:240	Measures interpersonal dynamics for building productive professional relationships and enhancing productivity and career potential. Based on a model that identifies 3 interpersonal expressed and wanted needs: inclusion, control and affection.

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Gordon Personal Profile-Inventory (GPP-I) The Psychological Corporation 1951–78 Grade 10 to Adults	MMY10:128 MMY9:444 TC2:326 T3:175	Combines 2 measures to assess 8 aspects of personality. The profile examines ascendancy, responsibility, emotional stability and sociability to yield a measure of self-esteem. Assesses cautiousness, original thinking, personal relations, and vigor.
Guilford-Zimmerman Temperament Survey (GZTS) Sheridan Psychological Services 1949–55 Age 16 to Adults	MMY9:460 MMY8:574 TC8:251 T3:177	Identifies strengths and weaknesses that are associated with personality and temperament. The 10 traits measured are: activity, restraint, ascendancy, sociability, emotional stability, objectivity, friendliness, thoughtfulness, personal relations, and masculinity/femininity. A computer-generated report is also available.
Inventory for Counseling and Development (ICD) NCS Assessments 1981–87 College Age	TC9:300 T3:767	Consists of 449 true-false questions which assess personal, social, and academic functioning. Identifies strengths, assets and coping skills. Can be used in academic and career planning, counseling and psychotherapy, career counseling, and for indicating risk factors. Available in paper/pencil or computer form.
Jackson Personality Inventory (JPI) Research Psychologists Press 1976 Grade 10 to Adults	MMY8:593 TC2:369 T3:185	Assesses personality traits relevant to work, organizational behavior, and interpersonal situations. Consists of 320 true-false items from 16 scales such as innovation, self-esteem, social participation, etc. Administered manually or on IBM disk. Available in English and French.
Jenkins Activity Survey (JAS) The Psychological Corporation 1965–79 Adults	MMY9:545 TC7:264 T3:9	Assesses behavior patterns typically associated with the "coronary-prone behavior pattern, Type A." A self-report, multiple-choice questionnaire that measures 3 independent components: speed and impatience, job involvement, and hard-driving and competitive tendencies.
Meyer-Kendall Assessment Survey (MKAS) Western Psychological Services 1986 Adults	T3:1011	Consists of 105 dichotomous items assessing personal functions relevant to work performance. Yields 12 scales. Intended for use by management consultants as part of a comprehensive assessment; not for general personnel screening. Must be computer-scored.

Neo Personality Inventory (NEO-PI) Psychological Assessment Resources 1978–85 Adults	MMY11:258 MMY10:214 TC8:527 T3:201	Designed to provide a general description of personality relevant to clinical, counseling, and educational situations. Measures 5 domains: Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. Consists of 181 items rated on a 5-point scale.
The Personal Audit SRA/London House 1945–90 Grade 9 to Adults	T3:1017	Measures personality traits objectively to assess personal adjustment essential to job satisfaction and success. Traits measured include: seriousness-impulsiveness, firmness-indecisiveness, frankness-evasion, contentment-worry, etc. For education, clinical and industrial use.
Personal Skills Map (PSM) Life Skills Center, P.C. 1981 Elementary to Adults	TC5:318 T3:1018 CG2:234	Consists of 300 items that are reactions to situations and items that are self-descriptions. Provides a research-based assessment of intrapersonal, interpersonal, and life management skills directly related to achievement, performance, adjustment and healthy living.
Picha-Seron Career Analysis (PSCA) International Career Planning Services 1991 Junior High to Adults		A forced-choice format which provides a description and analysis of an individual's work style and relates this work style to 178 selected technical, managerial and professional occupations.
Sales Attitude Checklist SRA/London House 1960 Individuals Interested in Sales Positions	T3:1084	Designed to assess sales attitudes and habits via 31 self-descriptive, forced-choice items. Specifically intended for use in identifying potentially successful salespeople.
Self-Description Inventory NCS Assessments 1975–77 Grade 9 to Adults	MMY9:1096 T3:988	Assesses normal personality functioning and vocationally-oriented dimensions of personality. Reports 22 scores: 11 personal descriptions (e.g., cautious-adventurous, 6 vocationally oriented scales (RIASEC), and 5 administrative indices (e.g., response percentage).
Singer-Loomis Inventory of Personality (SLIP) Consulting Psychologist Press 1984 Grade 9 to Adults	MMY9:1131 T3:221	Contains 15 situations, each followed by 8 items which the individual responds to using a 5-point Likert scale. Describes the user's personality from a Jungian perspective by providing the individual with a description of thought patterns and how situations or problems are approached.

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Survey of Work Styles (SWS) Sigma Assessment Systems 1987 Adults		A computerized personality assessment which gathers information on 4 factors (self-awareness, centeredness, perceptions, and decision making). Identifies individuals as having 1 of 8 work styles, such as forecaster, enthusiast, organizer, precisionist, caretaker, purist, etc.
Temperament Comparator (TC) SRA/London House 1957–61 Adults	MMY9:1234	A paper/pencil inventory which assesses 18 relatively permanent temperament traits that contribute to basic behavior. Determines potential for successful performance in sales and higher-level professional and managerial positions.
Temperament and Values Inventory (TVI) NCS Assessments 1976–77 Grade 9 to Adults	TC1:660 T3:1033 CG2:243	Assesses work-related temperament through 133 true-false items (how an individual reacts to various activities and situations) and 97 Likert items reward values (what aspects of a job an individual finds most rewarding.) Primarily used for career counseling.
Thurstone Temperament Schedule SRA/London House 1949–91 Grade 9 to Adults	TC2:815 T3:1034	Consists of 120 short questions that yield temperament profile scores for 6 personality traits: active, impulsive, dominant, stable, sociable, and reflective. Hand-scored carbon insert (answers transfer to scoring key on inside of test booklet). Appraisal/selection of applicants.
Vocational Implications of Personality (VIP) Talent Assessment 1986 Grade 7 to Adults		A computerized personality assessment that gathers information on 4 factors (self-awareness, centeredness, perceptions, and decision making) and then identifies individuals as having 1 of 8 work styles such as forecaster, enthusiast, organizer, precisionist, designer, etc.
Work Attitudes Questionnaire Marathon Consulting and Press 1980–81 Adults	MMY9:1395 T3:1037	Designed to differentiate "workaholic" individuals from other committed workers. Consists of 2 scales. The first assesses the level of work commitment. The second assesses the psychological healthiness or unhealthiness of work attitudes.
Work Situations Bennett & McKnight 1986 Grade 9 to 12		Students view a filmstrip which describes major work situations and then complete a 10-item checklist to identify their temperaments and adaptive skills. Also includes a listing of Worker Trait Groups by work situations, which promotes further career exploration.

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H. INSTRUMENTS FOR DISABLED OR DISADVANTAGED POPULATIONS

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Adaptability Test SRA/London House 1943–67 Applicants or Employees Limited in Adaptability	T3:971 B:85	Contains 35 items including word definitions, analogies, arithmetic computation, and series designed to differentiate between those who would perform better in routine jobs and those who could be placed in jobs that demanded more learning ability.
Becker Work Adjustment Profile (BWAP) CTB Macmillan/McGraw-Hill 1989 Grade 10 to Adults	MMY11:33 T3:647	Assesses work habits, attitudes, and skills important to work readiness, job adjustment, and employability. The questionnaire consists of a rating scale completed by an evaluator on job behavior items such as appearance, judgement, punctuality, productivity, and work safety.
Career Adaptive Behavior Inventory (CAB) Special Child Publications 1980 Age 5 to 15	MMY9:192	Consists of ratings given by parents, teachers, and other professionals on a checklist of 120 items. Provides 10 categories: academics, interests, leisure time, motor ability, responsibility, communications, self-concept, self-help, socialization, and task performance.
Career Evaluation Systems Series 100–300 Career Evaluation Systems 1983–86 Age 16 to Adults	CG2:249	Computerized assessment program which integrates 19 human factors and abilities to provide an ability profile for occupations. Based on many different commercially available measures of aptitude such as: verbal and numerical reasoning, spatial perception, finger dexterity, etc.
Career Inventories for the Learning Disabled (CILD) Academic Therapies Publication 1983 High School to Adults, Learning Disabled		Uses 3 inventories to aid in making career choices. The inventories include attributes to assess personality characteristics, abilities to profile strengths and weaknesses, and interests to assist in determination of career goals. Inventories administered orally by examiner.
Comprehensive Occupational Assessment and Training System (COATS) Educational Technologies 1975–81 Grade 9 to Adults		Contains 4 components that can be used independently: job matching, employability attitudes, 26 work samples (e.g., masonry, real estate, and nutrition), and living skills (literacy and knowledge). Provides activities to change behavior.

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Employment Barrier Identification Scale (EBIS) Behavior Science Press 1982–83 Age 15 to Adults	MMY9:384 T3:880	Evaluates an individual's employability. Includes job skills, education, environmental support and personal survival skills. Identifies areas where the individual may need training. Can be presented orally to non-reading examinees.
Florida International Diagnostic-Prescriptive Vocational Competency Profile Stoelting Company 1979–80 Adolescents to Adults	MMY9:420 TC6:183 T3:844	Evaluates general functional level and 6 specific domains of vocational competency: vocational self-help skills, social-emotional adjustment, work attitudes-responsibility, cognitive-learning ability, perceptual-motor skills, and general work habits.
Geist Picture Interest Inventory Western Psychological Services 1959–71 Grade 8 to Adults, Non-readers	MMY6:1054 T3:822	Provides scores for 11 or 12 interest areas such as persuasive, clerical, mechanical, scientific, outdoor, artistic, social service, etc. Also provides scores for 7 motivational areas such as: family, prestige, financial, environmental. Male and female versions.
Jewish Employment Vocational Service Work Sample System (JEVS) Vocational Research Institute 1973 Un/Under Employed, Disabled	MMY8:982 CG1:166 B:87	Consists of 28 work samples related to 10 Worker Trait Group Arrangements in the DOT (3rd ed.) and 12 Work Groups of three work areas in the DOT (4th ed.). Useful in evaluating disadvantaged youth and adults for vocational placement and training, and in rehabilitation and school settings. Requires training to administer.
Key Educational Vocational Assessment System (KEVAS) Key Education 1985 High School to Adults, Disabled & Non-Disabled	T3:846 B:85/87/93	Includes 20 apparatus, achievement, interest and personality tests that must be administered by two trained examiners. Measures such variables as hearing, visual and color acuity, auditory and visual reaction time, abstract reasoning ability, response to stress, vocational interest.
Learning Styles Inventory Piney Mountain Press 1991 Age 7 to Adults	T3:780	Assesses 9 areas: auditory language, visual language, auditory numerical, visual numerical, auditory-visual-kinesthetic, group learner, social learner, oral expressive, and written expressive. Available in 2 versions: audio-visual presentation and vocational version. Vocational version also considers environmental and working conditions.

Microcomputer Evaluation and Screening Assessment (MESA) Valpar International Corporation 1984 High School to Adults, Vocational Rehabilitation Applicants	B:85/87	Consists of 9 work samples: hardware screening, physical capacities and mobility evaluation, vocational interest and awareness screening, independent perceptual screening assessment, talking/persuasive screening, working conditions, specific vocational preparation and computer screening. Provides individual with Worker Trait Profile.
Microcomputer Evaluation of Career Areas (MECA) The Conover Company, Ltd. 1986–92 Grade 7 to 12, Disadvantaged & Disabled	B:85/87/93	Designed for vocational exploration via 15 work samples containing 3 tasks each, such as automotive, building maintenance, cosmetology, graphic design, custodial housekeeping, electronics, small engines, food service, health care, business and office, manufacturing, distribution, and computers. Available for IBM and Apple.
Micro-Tower Institute for Crippled and Disabled 1977 Special Needs Populations	B:87/93	Contains 14 work samples: electronic connector assembly, bottle capping/packing, lamp assembly, blueprint reading, graphic illustration, filing, mail sorting, zip coding, recording, checking, making change, payroll computation, want ad comprehension, and message taking.
Personnel Tests for Industry—Oral Directions Test (PTI-ODT) The Psychological Corporation 1946–74 Bilingual Persons with English As a Second Language	T3:909 B:85	A wide-range assessment of general mental abilities and an individual's comprehension of oral directions. Users respond to a cassette tape that dictates instructions. Test requires 15 minutes and is hand-scored. Used as a screening device for vocational trainees and industrial personnel.
Picture Interest Exploration Survey (PIES) Education Achievement Corporation 1974 Grade 7 to 12, Non-readers	MMY8:1018	A career interest survey employing 156 slides, each depicting a worker's hands performing a task that represents a particular occupation. Scores are provided for 13 occupational areas such as office, sales, construction, mechanics and repair, agriculture, etc.
Practical Assessment Exploration System (PAES) Talent Assessment 1991 Special Needs Populations Grade 7 to 12		A curriculum based vocational assessment program that provides hands-on evaluation. Evaluation and transition data includes job skill, quality of performance, work rate, interests, and behavioral barriers to employment and training.

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Prep Work Samples Educational Technologies 1977 Special Needs Populations	B:85/87	Consists of 27 independent work samples, such as: drafting, wood construction, food preparation, travel services, small engine, police science, electronics, commercial art, fire science, refrigeration, solar technology, machine trades, etc. One of the four components of COATS.
Program for Assessing Youth Employment Skills (PAYES) Educational Testing Service 1979 School Drop Outs, Disadvantaged Adolescents	TC9:411 T3:850 CG2:265	A non-sexist measure of attitudes, cognitive skills, and vocational preference for disadvantaged youth. Provides a structured approach to identify an individual's comprehension of attitudes, interests, knowledge and skills needed to find, obtain, and maintain a job.
San Francisco Vocational Competency Scale The Psychological Corporation 1968 Mentally Retarded Adults	MMY7:1073	Rates users for participation in sheltered workshops and other workshop programs. Focuses on the following four areas: motor skills, cognition, responsibility, and social-emotional behavior.
Skills Assessment Module (SAM) Piney Mountain Press 1981–92 Age 13 to 18, Mildly Disabled (LD, ED, Mildly Retarded) and/or Disadvantaged	MMY11:364 B:85/87/93	Assesses general aptitude, specific work behavior, and learning styles via 3 paper/pencil tests and 12 work samples such as: mail sort, payroll, computation, patient information memo, pipe assembly, block design, small parts, color sort, circuit board.
Tests for Everyday Living (TEL) CTB Macmillan/McGraw-Hill 1979 Grade 7 to 12	T3:674	Measures knowledge of skills necessary to perform everyday life tasks. Consists of 7 tests: purchasing, habits, budgeting, banking, job-search skills, job-related behavior, home management, and health care. Designed for poor readers.
Testing, Orientation, and Work Evaluation in Rehabilitation (TOWER) Institute for Crippled and Disabled 1974 Disabled Persons	B:87	Assesses vocational potential of disabled individuals in 14 areas of work: clerical, drafting, drawing, electronics assembly, jewelry, leather goods, lettering, machine shop, mail clerk, optical mechanics, pantograph engraving, sewing, workshop assembly, and welding.

USES Basic Occupational Literacy Test (BOLT) United States Employment Service 1974 High School Dropouts	MMY11:453 MMY8:491	Designed to measure basic reading and arithmetic skills of school dropouts who are referred for occupational training or remedial education. Provides scores for reading vocabulary, reading comprehension, arithmetic computation, and arithmetic reasoning.
USES Non-reading Aptitude Test Battery (NATB) United States Employment Service 1965–82 Grade 9 to Adults, Disadvantaged	MMY9:1305 TC:3 CG1:181	Non-reading adaptation of the GATB that includes 7 or 8 pencil/paper tests and 4 performance tests. Provides 9 scores: intelligence, verbal, numerical, spatial, form perception, clerical perception, motor coordination, finger dexterity, and manual dexterity.
Valpar-17 Pre-Vocational Readiness Battery (PVRB) Valpar International Corporation 1978–86 Special Needs Populations, Grade 7 to Adults	CG2:280	A series of screening tests designed to separate individuals who may have a problem or deficit in educational and vocational settings. Consists of 4 subtests: developmental assessment, workshop evaluation, interpersonal and social skills, and independent living skills.
Valpar Component Work Sample System Valpar International Corporation 1974–81 General Population & Industrially Injured Persons	CG1:184 B:87	Consists of 19 work samples designed to measure broad worker traits, such as small tools, upper extremity range of motion, simulated assembly, etc. Yields scores and clinical observations that can be used for job training and placement and for constructing programs.
Vocational Adaptation Rating Scales (VARS) Western Psychological Services 1980 Mentally Retarded Persons Age 13 to Adults	MMY9:1334 T3:657	Uses parent, teacher, and professional ratings to measure maladaptive behaviors likely to hinder vocational adjustment. Provides frequency and severity scores in 17 areas such as verbal manners, communication skill, respect for property, rules and regulations.
Vocational Behavior Checklist (VBC) West Virginia Rehabilitation Research and Training Center 1978 Adults	MMY9:1335 T3:851	Designed for use with rehabilitation clients. Assesses 7 skills: pre-vocational, job-seeking, interview, job-related, work-performance, on-the job/social, and union-financial-security.
Vocational Evaluation Systems (Singer) New Concepts Corporation 1971 Special Needs Populations	B:85/87/93	Provides a wide variety of occupational information via 28 independent and versatile work samples such as bench assembly, electrical wiring, plumbing and pipe fitting, needle trades, cook and baker, cosmetology, office services, information processing, machine trades, etc.

Name of Test/Publisher/Date/Population	*Reference(s)*	*Brief Description*
Vocational Information and Evaluation Work Samples (VIEWS) Vocational Research Institute 1977 Moderate & Severely Mentally Retarded Adults	T3:837 CG1:167 B:85/87/93	Consists of 16 work samples grouped into 4 levels of the Data, People, Things typology. Samples include: bolts and washers sorting, stamping, mail sort, machine feeding, paper cutting, drill press, circuit board assembly, etc. Training required to administer.
Vocational Interest and Sophistication Assessment (VISA) O.S.U. Nisonger Center 1968 Mildly Retarded Adolescents & Young Adults	T3:658 CG1:189	A reading-free instrument which provides a measure of an individual's interest in and knowledge about a series of job alternatives. Activities depicted are in the unskilled and semi-skilled job areas.
Vocational Interest Temperament and Aptitude System (VITAS) Vocational Research Institute 1979 Educationally and/or Culturally Disadvantaged	T3:658 CG1:168 B:85/87/93	Contains 21 independent work samples based on 16 Work Groups. Samples include: laboratory, engineering and craft technology, production work, quality control, financial detail, oral communications, etc. Requires training to administer.
Vocational Learning Styles Piney Mountain Press 1991 Age 14 to Adults		A multi-sensory learning styles assessment designed for school and work. Considers traditional style factors, as well as environmental and working styles critical to training and job success. Scoring formats include self, computer, and machine.
Vocational Opinion Index ARBOR 1973–76 Disadvantaged Trainees in Vocational Skills Programs	MMY9:1340 MMY8:1056 T3:1035	Designed to measure attitudes, perceptions, and motivations that affect an individual's ability to get and/or hold a job. Provides 13 scores for 3 broad areas: attraction to work, losses associated with work, and barriers to employment.
Vocational Training Inventory and Exploration Survey (VOC-TIES) Piney Mountain Press 1986–91 Disadvantaged & Mildly Handicapped Youth	T3:840	A multi-media kit used to identify vocational interests, enhance vocational awareness, and promote sex equity by showing persons in non-traditional rolls. Includes a video for 15 commonly available vocational programs. Apple/IBM program provides printout of interests.

Vocational Transit Vocational Research Institute 1989 MR, LD, Brain Injured	T3:658 B:93	Designed to allow individuals to demonstrate their true aptitudes by accommodating alternative learning styles, short term memory deficits and attention span difficulties. Subtests include motor coordination, manual dexterity, finger dexterity and form perception.
Wide Range Employment Sample Test (WREST) Jastak Associates 1980 Age 16 to Adults, General Population, Sheltered Workshops, & Industrial Settings	MMY9:1365 MMY8:987 CG1:192 B:87/93	Measures work productivity in terms of quantity and quality of performance on 10 tasks: folding, stapling, packaging, measuring, stringing, gluing, collating, color matching, pattern matching, and assembly.
Wide Range Intelligence-Personality Test (WRIPT) Jastak Associates 1958–74 Age 9 to Adults	MMY8:492 T3:258	Provides a measure of students' abilities through 10 direct scores: vocabulary, coding, verbal reasoning, number series, spelling, space series, etc. Also yields 6 derived scores: intelligence, capacity, motivation, language, reality and psychomotor.
Work Interest Index (WII) SRA/London House 1965–80 Grade 7 to Adults	MMY9:1400 TC5:565	Consists of 96 pictorial items assessing work interest in 12 areas. Each picture item is numbered and includes boxes marked "L" (like) and "D" (dislike). Designed for individuals with minimal language skills.
Work Skills Development Package (WSD) Attainment Company 1982–91 Severely Mentally Retarded, Mentally Ill, Physically Disabled	B:85	A pre-vocational training program containing 20 work samples, grouped into 4 difficulty levels, that assess 3 pre-vocational skills: discrimination between objects, manipulation of small objects, and application of basic concepts. Examples of work samples are: sand box packaging, tactile discrimination, etc.

APPENDIX A

Sources of Information About Testing and Career Assessment

Sources of Information About Testing and Career Assessment

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INTRODUCTION

This section contains a list of sources suggested as references about assessment instruments and their use in enhancing career development. Included are textbooks, reference books, and monographs selected because their content has application to career assessment issues and problems faced by counselors, teachers and administrators. The list of psychometric texts contains many which have undergone several revisions, indicating their continued value. Recent textbooks about career development have been included when they address general issues of test selection and usage or refer to innovative approaches in career assessment. In addition, materials for disabled and disadvantaged populations, the familiar volumes of test bibliographies and reviews, and a list of periodicals are included here.

The sources of information listed are not exhaustive, but are representative of the best resources available. Most readers should find sufficient information in these sources to answer most questions about career assessment instruments and their application to the career development process.

STANDARDS FOR PUBLISHERS AND USERS OF TESTS

American Counseling Association. (1989). *Responsibilities of users of standardized tests.* Alexandria, VA: Author.

This is a revision of the original Responsibilities statement first published in 1978 by APGA. This version, developed by the Association for Assessment in Counseling (AAC) on behalf of the American Counseling Association (ACA) contains the following sections: Introduction, Test Decisions, Qualification of Test Users, Test Selection, Test Administration, Test Scoring, Test Interpretation, Communicating Test Results, and Extension of These Principles. The target audience is members of ACA and its divisions. The statement should also be of interest to test developers, teachers, administrators, parents, and the general public.

American Psychological Association. (1985). *Standards for educational and psychological testing*. Washington, DC: Author.

Co-sponsored by the APA, American Educational Research Association, and the National Council on Measurement in Education, these standards address technical problems, ethics, and applicability of tests in both research and clinical settings. The contents are divided into an Introduction and 16 chapters organized into the following sections: Technical Standards for Test Construction and Evaluation, Professional Standards for Test Use, Standards for Particular Applications, and Standards for Administrative Procedures.

American Psychological Association. (1986). *Guidelines for computer-based tests and interpretation*. Washington, DC: Author.

These guidelines are a special application of the APA (1985) Standards for Educational and Psychological Testing and relate specifically to the use of computer administration, scoring, and interpretation of psychological tests. They are intended to provide a frame of reference for addressing relevant issues arising from the use of computer technology in testing.

American Psychological Association. (1988). *Code of fair testing practices in education*. Washington DC: Author.

The code was developed by a Joint Committee on Testing Practices which involved six professional associations. A total of 21 standards for educational test developers and users are presented in four areas: Developing/Selecting Tests, Interpreting Scores, Striving for Fairness, and Informing Test Takers.

Eyde, L. D., Robertson, G. J., Krug, S. E., & Associates. (1993). *Responsible test use: Case studies for assessing human behavior*. Washington, DC: American Psychological Association.

This publication from the American Psychological Association is a guide to competent test use through proper selection, administration, and interpretation. Authored by the Test User Training Work Group of APA, it is intended as a training resource. Included are 78 real-life case studies based on empirically devised testing problems with analysis of proper test use and misuse. The cases are arranged in a sequence covering training, selection, administration, scoring, feedback to clients, and policy issues.

Prediger, D. J. (1993). *Multicultural assessment standards: A compilation for counselors*. Alexandria, VA: Association for Assessment in Counseling/American Counseling Association.

The purpose of these standards is to further the realization of diversity, development and dignity in respect to the use of psychological assessments with multicultural populations. The 34 standards contained in this report were identified from five source documents that address testing and/or multicultural standards for education, counseling or psychological testing.

PSYCHOMETRIC TEXTS AND MONOGRAPHS

Aiken, L. R. (1988). *Psychological testing and assessment* (6th ed.). Boston: Allyn & Bacon.

This textbook covers the usual historical and psychometric background information and also has a chapter on testing special abilities (e.g. mechanical) and another on assessment of interests, attitudes and values. The latter chapter is devoted primarily to discussions of the Strong and Kuder inventories.

Anastasi, A. (1993). *Psychological testing* (7th ed.). New York: Macmillan.

The seventh edition of this popular textbook was revised to cover advances in psychological testing in the 1990s. Chapters on multiple aptitudes, occupational testing, self-report inventories, and measuring interests, values and attitudes have direct application to career development.

Cronbach, L. J. (1984). *Essentials of psychological testing* (4th ed.). New York: Harper & Row.

This highly respected textbook contains specific chapters on personnel selection, interest inventories, and personality assessment including occupational prediction.

Drummond, R. J. (1992). *Appraisal procedures for counselors and helping professionals* (2nd ed.). New York: Merrill.

The author uses a systems approach to organize assessment knowledge, skills and competencies. One chapter covers interests, values and career counseling instruments and other chapters cover personality and developmental assessment related to careers.

Hood, A. B., & Johnson R. W. (1991). *Assessment in counseling: A guide to the use of psychological assessment procedures.* Alexandria, VA: American Association for Counseling and Development.

This recent textbook about psychological assessment procedures discusses the use of over 100 instruments as applied to counseling. Case examples help illustrate use of tests. A four-chapter section covers career and life planning assessment.

Lowman, R. L. (1991). *The clinical practice of career assessment: Interests, abilities, and personality.* Washington, DC: American Psychological Association.

The author presents an interdomain career assessment model based on Holland's hexagon which is designed to integrate test and non-test data about interests, abilities and personality. Career assessment is conceptualized as a clinical activity and Lowman addresses issues about what and how to assess and how to integrate findings.

Lyman, H. B. (1986). *Test scores and what they mean* (4th ed.). Englewood Cliffs, NJ: Prentice-Hall.

This book was written for professionals with very little formal training in measurement. It covers general features of tests and how to understand test scores and convey the meaning to students and clients.

Murphy, K. R., & Davidshofer, C. O. (1991). *Psychological testing: Principles and applications* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.

This text contains chapters on psychological testing for ability testing and interest as well as testing in industry and personality testing in clinical settings. The interest section, for example, includes a description and evaluation of SII, Kuder, CAI and JVIS.

Walsh, W. B., & Betz, N. E. (1990). *Tests and assessment* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.

One of six parts in the text covers the assessment of interests and career development. Five interest inventories, three work values inventories, three measures of career development and career maturity, and two measures of career indecision are described and illustrated. The book is written specifically for a counselor audience.

Watkins, C. E., Jr., & Campbell, V. L. (Eds.). (1990). *Testing in counseling practice*. Hillsdale, NJ: Lawrence Erlbaum.

This volume includes several chapters written by advocates for or authors of specific personality inventories, interest inventories, card sorts, and career choice process scales. Additional chapters cover models and issues in using tests in counseling and with computer applications.

CAREER DEVELOPMENT TEXTS

Brown, D., & Brooks, L. (1991). *Career counseling techniques*. Boston: Allyn & Bacon.

This textbook, written especially for career counselors about specific techniques for assessing and interviewing, is appropriate for a wide variety of career problems. A six-chapter section describes how to use assessment techniques, such as assessing interests, values, personality and inter-role relationships.

Gysbers, N. C., & Moore, E. J. (1986). *Career counseling: Skills and techniques for practitioners*. Englewood Cliffs, NJ: Prentice-Hall.

While tests are discussed only briefly in this practitioner's guide, an interviewing strategy called life career assessment is described in detail. Another chapter is devoted to identifying and analyzing life career themes.

Herr, E. L., & Cramer, S. H. (1992). *Career guidance and counseling through the life-span: Systematic approaches* (4th ed.). Boston, MA: Little, Brown & Co.

This text provides a comprehensive treatment of career guidance and counseling. One lengthy chapter covers assessment and is divided into four functions: prediction, discrimination, monitoring, and evaluation. Within each section, several instruments are described briefly with particular attention to scale names.

Isaacson, L. E., & Brown, D. (1993). *Career information, career counseling, and career development* (5th ed.). Boston: Allyn & Bacon.

This is a general textbook about facilitating career development processes. One lengthy chapter contains extensive treatment of assessment procedures including qualitative and quantitative/objective assessment instruments. Several specific interest, values and personality inventories, multiple aptitude tests and career diagnostic instruments are described briefly.

Peterson, G. W., Sampson, J. P., Jr., & Reardon, R. C. (1991). *Career development services: A cognitive approach*. Pacific Grove, CA: Brooks-Cole.

The authors describe career development and career counseling, from a unique cognitive information-processing framework. They include one chapter on how to select and interpret career assessment procedures that elaborates on self and career schemata. A few instruments are described as examples.

Savickas, M. L. (1992). New directions in career assessment. In Montross, D. H. & C. J. Shinkman (Eds.), *Career development: Theory and practice*. Springfield, IL: Charles C. Thomas.

This one chapter devoted to career assessment presents an overview of new models and new means to appraise subjective career experience. The chapter reviews strategies to assess career themes, career decision making, and career adaptability.

Spokane, A. R. (1991). *Career intervention*. Englewood Cliffs, NJ: Prentice Hall.

This textbook is about how to help people improve their ability to make career decisions. It contains elaborate chapters on vocational assessment and selection and use of vocational inventories.

Walsh, W. B., & Osipow, S. H. (Eds.). (1986). *Advances in vocational psychology: Vol. I: The assessment of interests*. Hillsdale, NJ: Lawrence Erlbaum.

Several chapters contained in this edited book are devoted to discussing the Strong, the Kuder and Self-Directed Search and their uses. An excellent chapter by Linda Gottfredson on "special groups and the beneficial use of vocational interest inventories" provides an elaborate problem analysis framework.

Walsh, W. B., & Osipow, S. H. (Eds.). (1988). *Career decision making*. Hillsdale, NJ: Lawrence Erlbaum.

This book contains three separate chapters devoted to extensive reviews of instruments assessing career decision-making, career development and maturity, and career-planning systems. Each chapter includes an extensive review of literature about theoretical constructs, technical development, and appropriate use of several instruments.

Walsh, W. B., & Osipow, S. H. (Eds.). (1990). *Career counseling: Contemporary topics in vocational psychology*. Hillsdale, NJ: Lawrence Erlbaum.

Contained in this book are seven separate chapters each covering an approach to career counseling. Most chapters include a segment on how assessment should be integrated into counseling, including occasional reference to particular instruments.

Zunker, V. G. (1994). *Using assessment results for career development* (4th ed.). Pacific Grove, CA: Brooks/Cole.

After three introductory chapters on assessment concepts and the rationale behind using assessment results in counseling, Zunker covers many different types of career assessments in nine additional chapters. Reviews of specific instruments are found within each of these chapters. Case studies are included to illustrate interpretations for some of the instruments.

MATERIALS FOR DISABLED AND DISADVANTAGED POPULATIONS

Bolton, B. (Ed.). (1987). *Handbook of measurement and evaluation in rehabilitation* (2nd ed.). University Park, MD: University Park Press.

This text is divided into three major sections. Fundamentals of Measurement covers the introduction to psychometric theory. The second section, Review of Instruments, has a chapter which reviews vocational inventories. The bulk of the book is taken up by Section III, Applications for Rehabilitation. Chapters within this section address applying test results to the development of individualized rehabilitative programming with various special populations.

Botterbusch, K. F., & Michael, N. (1985). *Testing and test modification in vocational evaluation.* Menomonie, WI: Materials Development Center, Stout Vocational Rehabilitation Institute, University of Wisconsin-Stout.

This publication is a guide to the selection, use, and modification of psychological tests for use with individuals with one or more of three disabilities: visual, hearing and mental retardation. This guide is comprised of three sections which: 1) give general psychometric information and explain the use of tests in evaluation programs, 2) describe the modification of tests for the special populations stated above, and 3) review the tests used in evaluation programs. The reviews in section 3 are further divided into categories of tests (achievement, aptitude, intelligence, interest, work attitude, etc.). An alphabetical list of reviewed tests and a publisher's directory are in appendices.

Brown, C. D., McDaniel, R. M., Couch, R. H., & McClanahan, M. (1993). *Vocational evaluation systems and software: A consumer's guide.* Menomonie, WI: Materials Development Center, Stout Vocational Rehabilitation Institute, University of Wisconsin-Stout.

This publication describes and reviews 18 commercially available vocational assessment and evaluation systems and nine job search software packages. The guide is an updated combination of two previously published documents, *Vocational Assessment and Evaluation Systems: A Comparison* and *A Comparison of Computerized Job Matching Systems*, both authored by Botterbusch at the University of Wisconsin-Stout. The primary purpose of this guide is to help administrators, supervisors, private rehabilitation personnel, vocational evaluation and assessment personnel, teachers, and others who may be potential purchasers and users of such systems. A standard format for each product reviewed includes descriptions, administration procedures, scoring, interpreting and reporting, measurement properties, and a summary and review.

Kapes, J. T., Parrish, L. H., Vansickle, T. R., & Vansickle, K. J. (1988). *Vocational assessment handbook.* Austin, TX: Extension Instruction & Materials Center, University of Texas at Austin.

The purpose of this handbook is to provide resources for teachers, counselors and others engaged in the vocational assessment process under the provisions of the Carl D. Perkins Vocational Education Act. The handbook addresses the need to include both students with disabilities and disadvantages in the assessment process, and provides information on administering and interpreting the many assessment instruments for these diverse clientele. Sections include: Background and Overview, Career Assessment and Guidance of Handicapped Persons, Federal and State Requirements for Vocational Assessment, Available Assessment Instruments, Locally Developed Performance Samples, Writing Vocational Assessment Reports, and Interpreting and Using Vocational Assessment Data. An IBM compatible program to perform basic norm, reliability and validity analyses useful for vocational assessment is included.

Peterson, M. (1986). *Vocational assessment for vocational education: Competency analysis and work sample development.* Lathrup Village, MI: VOC-AIM.

The author reviews the problems encountered in using work sample systems with special students. A detailed approach to work sample development is provided for analyzing the competencies needed for success in vocational education programs. In addition, there is a step-by-step description of how to develop a work sample using the aforementioned analysis of student competencies. A criterion-referenced approach is advocated so that a clear picture of a student's strengths and weaknesses relative to success in a vocational education program can be obtained.

Peterson, M. (1986). *Vocational assessment of special students: A procedural manual.* Lathrup Village, MI: VOC-AIM.

This is a comprehensive manual describing a model for vocational assessment of special students in public schools. The three-stage model described includes: 1) a curriculum-based vocational assessment where existing personnel and resources are used to obtain informal information about students, 2) specific assessment questions to be answered for each student being evaluated, and 3) vocational evaluation—an intensive time-limited process of vocational assessment and exploration. Included in appendices are not only names and addresses of resources for further information on specific testing techniques, but also reviews of tests and work sample systems.

Power, P. W. (1991). *A guide to vocational assessment* (2nd ed.). Austin, TX: PRO-ED.

Written for anyone who counsels clients with disabilities, this book addresses both the intellectual and emotional needs of students in regard to vocational evaluation and rehabilitation. Specific vocational interest, intelligence, and educational achievement instruments are discussed in reference to people with disabilities.

TEST BIBLIOGRAPHIES AND REVIEWS

Association for Assessment in Counseling, Committee to Screen Career Guidance Instruments. (1988). *CSCGI Reports.* Alexandria, VA: Author.

The committee has compiled a series of test reviews that were published in the Association's AMECD Newsnotes from the Spring, 1980, to the Spring, 1988 issues. Each entry has information on the instrument's purpose, norms, reliability and validity, format, and scoring. Cost information may be out-of-date. The critical part of each review is concerned with the acceptability of the instrument for use in career counseling situations.

Educational Testing Service. (1988). *Test collection catalog: Vol. 2. Vocational tests and measurement devices.* Phoenix, AZ: Oryx Press.

Among the 1400 measures described in this second volume from ETS's Test Collection are vocational interest inventories and aptitude tests, work samples, attitude assessments, measures of career development, certification tests, measures for use with people with disabilities, and instruments to measure organizational climate and managerial styles. Information provided for each test are name, descriptors, availability (address), target audience and a brief description.

Educational Testing Service. (1992). *Test collection catalog: Vol. 6: Affective measures and personality tests.* Phoenix, AZ: Oryx Press.

This source contains descriptions of 1,560 personality and affective measures some of which apply to career development. Each instrument is described with name, availability, target audience, length of test and administration time.

Conoley, J. C., & Kramer, J. J. (Eds.). (1989). *Tenth mental measurement yearbook.* Lincoln, NE: Buros Institute of Mental Measurement.

This is one of the recent volumes in the most well-known source of test reviews. Several critical reviews are printed for each instrument. Each test is described and technical and practical issues are addressed. Most instruments used in career guidance and counseling have been reviewed in one or more volumes of the MMY series. This volume contains reviews of 100 tests classified for "vocations." Reviews of several major interest inventories are included.

Kramer, J. J., & Conoley, J. C. (Eds.). (1992). *Eleventh mental measurement yearbook.* Lincoln, NE: Buros Institute of Mental Measurement.

This most recent MMY volume includes reviews of 477 commercially available tests new or significantly revised since last reviewed in MMY. About one sixth of the tests reviewed are "vocational" in nature. Many of the instruments reviewed assess aptitudes or personality characteristics associated with specific occupations.

Kapes, J. T., & Mastie, M. M. (Eds.). (1982). *A counselor's guide to vocational guidance instruments.* Falls Church, VA: National Vocational Guidance Association.

Reviews of 40 instruments divided into appropriate categories comprise the primary emphasis of this volume. Over 70 additional tests and inventories are briefly described. A summary of the principles of choosing a test, a checklist of testing competencies and a bibliography of testing references are also included.

Kapes, J. T., & Mastie, M. M. (Eds.). (1988). *A counselor's guide to career assessment instruments.* (2nd ed.). Alexandria, VA: National Career Development Association.

This second edition of the above described book contains many of the same sections as the first edition in expanded and/or revised form. Reviews of 43 most prominent instruments are included as well as brief descriptions of 126 additional instruments. A Users Matrix, which cross-references test names with category and level of use, is an added feature.

Keyser, D. J., & Sweetland, R. C. (Eds.). (1984–92). *Test Critiques.* (Vols. 1–9). Austin, TX: PRO-ED.

These volumes contain descriptive and critical reviews of measurement instruments judged by the volume editors to be the most frequently used. Included are 25 instruments used in "vocational guidance" and another 15 instruments measuring "interests." Coverage overlaps with the *Mental Measurement Yearbook* series, but these reviews are lengthier and are limited to single reviewers.

Krug, S. E. (Ed.). (1993). *Psychware sourcebook: A reference guide to computer-based products for behavioral assessment in psychology, education, and business* (4th ed.). Kansas City, MO: Test Corporation of America.

This comprehensive reference contains 553 entries for computer-based assessment packages, ranging from vocational guidance to behavioral medicine.

Information on each instrument includes: product name, supplier, category, primary application, sales restrictions, type and cost of service, and product descriptions. Samples are available for 324 products listed. The yearbook uses five indexes to organize and find the instruments including: product title, category, application, service listing, and supplier.

Mitchell, J. V. (Ed.). (1983). *Tests in print III: An index to tests, test reviews, and the literature of specific tests.* Lincoln, NE: Buros Institute of Mental Measurements.

Nearly all commercially published tests in the English language are listed here. The major format change from TIP II is its alphabetical arrangement by test title rather than alphabetical within broad subject categories. This reference work essentially acts as an index to the more recent editions of the *Mental Measurement Yearbook* Series; however, since it has not been revised since 1983, some of the information may be dated.

Sweetland, R. C., & Keyser, D. J. (Eds.). (1991). *Tests: A comprehensive reference for assessments in psychology, education and business* (3rd ed.). Austin, TX: PRO-ED.

This third edition of *Tests* follows close on the heels of the first edition (1983) and the second edition (1986). Obviously, more recent tests or newer editions of established tests published since 1983 will be included here rather than in *Tests in Print III* (1983). *Tests* is narrower in coverage than TIP III, but there is considerable overlap. Unlike TIP III, however, each test's entry includes the purpose(s) for, as well as a description of, the instrument. There is no mention of publication date(s) in the entry from which the user may discern the age of the test described. Those career counselors serving clients with disabilities may find the hearing-impaired, physically-impaired, and visually-impaired indexes to *Tests* very useful.

PERIODICALS WHICH PUBLISH TEST RESEARCH AND REVIEWS

Listed below are those American periodicals which, over the last few years, have published a large portion of the reviews and research articles involving career assessment instruments. *News on Tests* deserves a special note. A newsletter currently published four times each year by the Test Collection division of ETS, *News on Tests* has bibliographic data and abstracts of the new tests acquired by the Test Collection including those of interest to counselors. Test reviews in the journals listed below are cited as well as new ERIC documents and published monographs in the assessment field. As with the ETS annotated bibliographies listed previously, the materials cited only reflect what ETS has acquired. However, the ETS research library and test collection are the most extensive on assessment in the United States, and very little escapes their notice.

AAC Newsnotes. Association for Assessment in Counseling, 5999 Stevenson Ave., Alexandria, VA 22304 (4/yr.). (Formerly: *AMECD Newsnotes* and *AMEG Newsnotes.*)

Applied Psychological Measurement. Applied Psychological Measurement, Inc., N658 Elliott Hall, University of Minnesota, Minneapolis, MN 55455 (4/yr.).

Career Development Quarterly. National Career Development Association, 5999 Stevenson Ave., Alexandria, VA 22304 (4/yr.). (Formerly: *The Vocational Guidance Quarterly.*)

The Counseling Psychologist. Sage Publications, Inc., 2455 Teller Road, Newbury Park, CA 91320 (4/yr.).

Counselor Education and Supervision. American Counseling Association, 5999 Stevenson Ave., Alexandria, VA 22304 (4/yr.).

Educational and Psychological Measurement. Educational and Psychological Measurement, Inc., Box 6856, College Station, Durham, NC 27708 (4/yr.).

Elementary School Guidance and Counseling. American Counseling Association, 5999 Stevenson Ave., Alexandria, VA 22304 (4/yr.).

Journal of Applied Psychology. American Psychological Association, 750 1st Street NE, Washington, DC 20002-4242 (4/yr.).

Journal of Career Assessment. Psychological Assessment Resources, Inc., P.O. Box 998, Odessa, FL 33556 (4/yr.).

Journal of Career Development. Human Sciences Press, 72 Fifth Ave., New York, NY 10011 (4/yr.). (Formerly: *Journal of Career Education.*)

Journal of Counseling and Development. American Counseling Association, 5999 Stevenson Ave., Alexandria, VA 22304 (6/yr.).

Journal of Counseling Psychology. American Psychological Association, 750 1st Street NE, Washington, DC 20002-4242 (4/yr.).

Journal of Educational Measurement. National Council of Measurement in Education, 1230 17th St. NW, Washington, DC 22304 (4/yr.).

Journal of Personality Assessment. Society for Personality Assessment, Inc., 1070 E. Angeleno Ave., Burbank, CA 91501 (6/yr.).

Journal of Psychoeducational Assessment. Grune & Stratton, Inc., 6277 Sea Harbor Dr., Orlando, FL 32821 (4/yr.).

Journal of Vocational Behavior. Academic Press, 111 5th Ave., New York, NY 10003 (6/yr.).

Measurement and Evaluation in Counseling and Development. American Counseling Association, 5999 Stevenson Ave., Alexandria, VA 22304 (4/yr.).

News On Tests. Test Collection, Educational Testing Service, Rosedale Road, Princeton, NJ 08541 (4/yr.). (Formerly: *Test Collection Bulletin.*)

Personnel Journal. Personnel Journal, Inc., 929 Harrison Ave., Suite 100, Columbus, OH 43215 (4/yr.).

Psychology in the Schools. Psychology Press, Inc., 4 Conant Sq., Brandon, VT 05733 (4/yr.).

The School Counselor. American Counseling Association, 5999 Stevenson Ave., Alexandria, VA 22304 (5/yr.).

School Psychology Review. National Association of School Psychologists, P.O. Box 184, Kent, OH 44240 (4/yr.).

NOTE: This chapter is a revised version of a chapter by Robert P. Jordan and David A. Jepsen which appeared in the second edition of this book. Some of the material contributed by Jordon has been retained in this edition.

APPENDIX B

Addresses of Publishers

Addresses of Publishers*

Academic Therapies Publication High
Noon Books
20 Commercial Boulevard
Novato, CA 94949-6191
(800) 422-7249

American College Testing (ACT)
2201 North Dodge Street
P.O. Box 168
Iowa City, IA 52243
(319) 337-1000

Anthony M. Alfano
6263 Twilight Avenue
Kalamazoo, MI 49004

American Guidance Service
4201 Woodland Road
P.O. Box 99
Circle Pines, MN 55014-1796
(800)328-2560
(612)786-4343

American Testronics
P.O. Box 2270
Iowa City, Iowa 52244
(800) 553-0030

ARBOR, Inc.
Arbor Corporate Center
One W. 3rd Street
Media, PA 19063
(215) 566-8700
(215) 566-1035 FAX

Assessment Systems Corporation
2233 University Avenue, Suite 440
St. Paul, MN 55114
(612) 647-9220

Attainment Company
P.O. Box 103
Oregon, WI 53575

BALL Foundation
800 Roosevelt Road
Building C, Suite 206
Glen Ellyn, IL 60137
(312) 469-6270

Birkman & Associates, Inc.
3040 Post Oak Boulevard, Suite 1425
Houston, TX 77056

Bowling Green State University
Department of Psychology
Bowling Green, OH 43403
(419) 352-5514

Brodhead-Garrett Company
4560 East 71st Street
Cleveland, OH 44105

Cambridge
#2 Players Club Drive
Charleston, WV 25311

Cambridge Book Company
888 Seventh Avenue
New York, NY 10106

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*Address and phone numbers (when available) are provided for all instruments included in either the review or additional instruments chapters. Compiled by Susan G. Matlock, Tammi Vacha-Haase, Department of Educational Psychology, Texas A&M University, and Edwin A. Whitfield, Associate Director, Assessment and Student Development, Ohio Department of Education.

Career Education Readiness
Measurement and Research
Southern Illinois University
Box 123
Edwardsville, IL 62025

Career Passports, Inc.
4747 Table Mesa Drive, Suite 200
Boulder, CO 80303
(800) 321-9381

Career Planning and Placement
Service
100 Noyes Hall
University of Missouri
Columbia, MO 65211

Career Research and Testing
2005 Hamilton Avenue, Suite 250
San Jose, CA 95125
(408) 559-4946

Career Systems, Inc.
1100 Wayne Avenue, 12th Floor
Silver Springs, MD 20910
(301) 589-1862

Careerware
Industrial Park, Building #3
Ogdensburg, NY 13669
(800) 267-1544

Center On Education and Work
964 Educational Sciences Building
1025 West Johnson Street
Madison, WI 53706
(800) 446-0399

CFKR Career Materials, Inc.
P.O. Box 439
Meadow Vista, CA 95722
(800) 525-5626
(916) 878-0118

Chronicle Guidance Publications, Inc.
66 Aurora Street, P.O. Box 1190
Moravia, NY 13118-1190
(800) 622-7284
(315) 497-0330

Clark Wilson Publishing Co.
1320 Fenwick Lane, Suite 708
Silver Spring, MD 20910
(800) 537-7249

COIN Educational Products
3361 Executive Parkway, Suite 302
Toledo, OH 43606
(800) 274-8515

College Board Publications
45 Columbus Avenue
New York, NY 10023
(212) 713-8000

College Major Card Sort
208 West, 100 South
Orea, UT 84057

The Conover Company
P.O. Box 155
Omro, WI 54963
(414) 685-5707

Consulting Psychologists Press, Inc.
3803 East Bayshore Road
P.O. Box 10096
Palo Alto, CA 94303
(415) 969-8901
(414) 857-1444
(415) 969-8608 FAX

Crites Career Consultants, Inc.
5460 White Place
Boulder, CO 80303
(303) 447-1639
(303) 440-0434 FAX

CTB McGraw-Hill
20 Ryan Ranch Road
Monterey, CA 93940
(800) 538-9547
(408) 649-8400

Department of Defense
Defense Manpower Data Center
Personnel Testing Program
99 Pacific Street, Suite 155A
Monterey, CA 93940-2453
(408) 655-0400
(408) 646-2087 FAX

EdITS
P.O. Box 7234
San Diego, CA 92167
(619) 222-1666

Education Guidance, Inc.
P.O. Box 511
Dearborn, MI 48121

Educational Achievement Corporation
P.O. Box 7310
Waco, TX 76710

Educational and Industrial Test Services, Ltd.
83 High Street
Hemel Hempstead, Harts.
HP13AH, England

Educational Technologies, Inc.
1007 Whitehead Road Extension
Trenton, NJ 08638
(609) 882-2668
(800) 882-4384

Educational Testing Service
Princeton, NJ 08541

Educators Assistance Institute
2500 Colorado Avenue
Santa Monica, CA 90406

Edupac, Inc.
231 Norfolk Street
Walpole, MA 02081

Elbern Publications
P.O. Box 09497
Columbus, OH 43209
(614) 235-2643

Evaluation Systems, Inc.
7788 Milwaukee Avenue
Niles, IL 60648

Fenner, Bradford J.
29 075 Avondale Lane
Lombard, IL 60148

Guidance Testing Associates
P.O. Box 28096
San Antonio, TX 78228
(512) 434-4060

Hester Evaluation Systems, Inc.
2709 West 29th Street
Topeka, KS 66614

Houghton Mifflin Company
1 Beacon Street
Boston, MA 02107

Human Systems Consultants, Inc.
110 North Tenth Street, Suite 7
Columbia, MO 65201

Institute for Crippled and Disabled
400 First Avenue
New York, NY 10009

Institute for Personality and Ability Testing, Inc.
1801 Woodfield Drive
Savoy, IL 61874
(217) 352-4739

International Career Planning Services, Inc.
254 Public Avenue
Joliet, IL 60435
(815) 744-1153
(815) 744-1154 FAX

The Interstate Printers and Publishers
P.O. Box 594
Jackson at Van Buren
Danville, IL 61832

Jastak Associates, Inc.
P.O. Box 3410
Wilmington, DE 19804-0250
(302) 658-4184

JIST Works, Inc.
720 North Park Avenue
Indianapolis, IN 46202
(800) 648-5478
(317) 264-3720

Key Education, Inc.
673 Broad Street
Shrewsbury, NJ 07702
(800) 255-3827
(908) 747-0048

Lawrence K. Jones
North Carolina State University
Box 7801
Raleigh, NC 27695
(919) 515-6359

Life Skills Center
1201 Second Street
Corpus Christi, TX 78404

Marathon Consulting and Press
P.O. Box 09189
Columbus, OH 43209
(614) 235-5509

McCarron Dial Systems
P.O. Box 45628
Dallas, TX 75245
(214) 247-5945

Meridian Education Corporation
236 East Front
Bloomington, IL 61701

NCS Assessments
P.O. Box 1416
Minneapolis, MN 55440
(800) 627-7271
(612) 939-5900
(612) 939-5199 FAX

Nelson Canada
Measurement & Guidance
Department
1120 Birchmount Road
Scarborough, Ontario, Canada
MIKSG4
(416) 752-9100

New Concepts Corporation
1802 North Division Street
Morris, IL 60450

North Carolina State University
College of Education
Box 7801
Raleigh, NC 27695
(919) 515-2231

NSVCS
Route 4, Box 217
Gainesville, FL 32601

OSU Nisonger Center
1580 Cannon Drive
Columbus, OH 43206

Piney Mountain Press
P.O. Box 333
Cleveland, GA 30528
(800) 255-3127
(404) 864-7180

PRO-ED
8700 Shoal Creek Boulevard
Austin, TX 78758
(512) 451-3246

Psychological Assessment Resources
(PAR)
P.O. Box 998
Odessa, FL 33556
(813) 968-3003
(800) 331-8378
(813) 968-2598 FAX

The Psychological Corporation
555 Academic Court
San Antonio, TX 78204-2498
(800) 228-0752
(512) 299-1061

Psychological Service Center of
Philadelphia
Suite 904
1422 Chestnut Street
Philadelphia, PA 19102

Psychological Services, Inc.
100 West Broadway, Suite 1100
Glendale, CA 91210
(818) 244-0033

Psychologists and Educators, Inc.
P.O. Box 513
Chesterfield, MO 63006
(314) 576-9127

Publishers Test Service
CTB McGraw-Hill
2500 Garden Road
Monterey, CA 93940
(800) 538-9547

Research Psychologists Press, Inc.
(SIGMA)
P.O. Box 610984
Port Huron, MI 48061-0984
(800) 265-1285

Riverside Publishing Company
8420 Bryn Mawr Avenue
Chicago, IL 60631
(800) 323-9540
(312) 693-0040

Scholastic Testing Service, Inc.
480 Meyer
P.O. Box 1056
Bensenville, IL 60106
(312) 766-7150

Science Research Associates/London
House
1550 Northwest Highway
Park Ridge, IL 60058
(708) 298-7311

Sigma Assessment Systems, Inc.
1110 Military Street
P.O. Box 610984
Port Huron, MI 48061-0984
(800) 265-1285

Slaney, R. B.
Dept. of Counseling Psychology
327 CEDAR Building
Pennsylvania State University
University Park, PA 16803

Stoelting
620 Wheat Lane
Wood Dale, IL 60191
(708) 860-9700

Strategic Career Services
3704 Mt. Diablo Boulevard
Suite 313
Lafayette, CA 95549

Talent Assessment, Inc.
P.O. Box 5087
Jacksonville, FL 32247-5087
(800) 634-1472
(904) 731-1415

Talico, Inc.
2320 South Third Street, Suite #5
Jacksonville Beach, FL 32250
(904) 241-1721

Train-Ease Corporation
47 Marble Avenue
Pleasantville, NY 10570
(800) 431-2016

United States Employment Service
Employment and Training
Administration
200 Constitution Avenue, N.W.
Washington, D.C. 20210

Utah Department of Employment
Security
174 Social Hall Avenue
P.O. Box 11249
Salt Lake City, UT 84147
(801) 536-7580

Valpar International Corporation
P.O. Box 5767
Tucson, AZ 85703
(602) 293-1510

Vocational Psychology Research
University of Minnesota
Elliot Hall N620
75 East River Road
Minneapolis, MN 55455-0344
(612) 625-1367

Vocational Research Institute
1528 Walnut, Suite 1502
Philadelphia, PA 19102
(800) 874-5387
(215) 875-7387
(215) 875-0198 FAX

Western Psychological Services
12031 Wilshire Boulevard
Los Angeles, CA 90025-1251
(310) 478-2061

The Wilmington Press
13315 Wilmington Drive
Dallas, TX 75234
(214) 620-8431

Wintergreen Software, Inc.
P.O. Box 15899
New Orleans, LA 70175-5899
(800) 321-9479

Wonderlic Personnel Test, Inc.
1509 North Milwaukee Ave.
Libertyville, IL 60048-1380
(800) 323-3742
(708) 680-9492 FAX

World of Work, Inc.
2923 North 67th Place
Scottsdale, AZ 85251
(602) 946-1884

APPENDIX C

Responsibilities of Users of Standardized Tests

Code of Fair Testing Practices in Education

Multicultural Assessment Standards: A Compilation for Counselors

Responsibilities of Users of Standardized Tests*

I. INTRODUCTION

Background

At the 1976 AACD (then APGA) Convention, the Board of Directors requested the development of a statement on the responsible use of standardized tests to promote proper test use, reflecting the advantages of assessment along with concerns about negative effects, and to help its members employ safeguards against misuse of tests. A committee representing all AACD divisions and regions spent two years studying the issues and developed a statement, published in the October 1978, issue of *Guidepost*, titled "Responsibilities of Users of Standardized Tests." The Association for Measurement and Evaluation in Counseling and Development was charged with maintaining ongoing review of the so-called RUST Statement. The present statement has grown out of that review.

Target Audience

The statement is intended to address the needs of the members of AACD and its Divisions, Branches, and Regions, including counselors and other human service workers. Although it may interest test developers, teachers, administrators, parents, the press, or the general public, it is not specifically designed for these audiences.

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*This 1989 revision of the 1978 RUST Statement was prepared by a standing committee of AAC chaired by William D. Schafer. Participating in the revision were Esther E. Diamond, Charles G. Eberly, Patricia B. Elmore, Jo-Ida C. Hansen, William A. Mehrens, Jane E. Myers, Larry Rawlins, and Alan G. Robertson.

Additional copies of the RUST Statement may be obtained from the American Counseling Association, 5999 Stevenson Avenue, Alexandria, VA 22304. Single copies are free.

Organization and Focus

The statement is organized into eight sections: Introduction, Test Decisions, Qualifications of Test Users, Test Selection, Test Administration, Test Scoring, Test Interpretation, and Communicating Test Results. Basic to the statement is the assumption that test data are merely numbers and that guidelines can help to promote their constructive use. The statement specifies general principles and activities which constitute responsible practice. These are grouped around similar issues and are indexed for ease of reference.

II. TEST DECISIONS

Decisions should be based on data. In general, test data improve the quality of decisions. However, deciding whether or not to test creates the possibility of three kinds of errors. First, a decision not to test can result in misjudgments that stem from inadequate or subjective data. Second, tests may produce data which could improve accuracy in decisions affecting the client, but which are not used in counseling. Third, tests may be misused. The responsible practitioner will determine, in advance, the purpose for administering a given test, considering protections and benefits for the client, practitioner, and agency.

A. Define purposes for testing by developing specific objectives and limits for the use of test data in relation to the particular assessment purpose:
   1. Placement: If the purpose is selection or placement, the test user should understand the programs or institutions into which the client may be placed and be able to judge the consequences of inclusion or exclusion decisions for the client.
   2. Prediction: If the purpose is prediction, the test user should understand the need for predictive data as well as possible negative consequences (e.g., stereotyping).
   3. Description: If the purpose is diagnosis or description, the test user should understand the general domain being measured and be able to identify those aspects which are adequately measured and those which are not.
   4. Growth: If the purpose is to examine growth or change, the test user should understand the practical and theoretical difficulties associated with such measurement.
   5. Program Evaluation: If the purpose of assessment is the evaluation of an agency's programs, the test user should be aware of the various information needs for the evaluation and of the limitations of each instrument used to assess those needs, as well as how the evaluation will be used.

B. Determine information needs and assessment needs:
   1. Determine whether testing is intended to assess individuals, groups, or both.
   2. Identify the particular individual and/or group to be tested with regard to the agency's purposes and capabilities.

3. Determine the limitations to testing created by an individual's age; racial, sexual, ethnic, and cultural background; or other characteristics.
4. Avoid unnecessary testing by identifying decisions which can be made with existing information.
5. Assess the consequences for clients of deciding either to test or not to test.
6. Limit data gathering to the variables that are needed for the particular purpose.
7. Cross-validate test data using other available information whenever possible.

III. QUALIFICATIONS OF TEST USERS

While all professional counselors and personnel workers should have formal training in psychological and educational measurement and testing, this training does not necessarily make one an expert, and even an expert does not have all the knowledge and skills appropriate to some particular situations or instruments. Questions of user qualifications should always be addressed when testing is being considered.

Lack of proper qualifications can lead to errors and subsequent harm to clients. Each professional is responsible for making judgments on this in each situation and cannot leave the responsibility either to clients or to others in authority. It is incumbent upon the individual test user to obtain appropriate training or arrange for proper supervision and assistance when engaged in testing. Qualifications for test users depend on four factors:

A. Purposes of Testing: Technically proper testing for ill-understood purposes may constitute misuse. Because the purposes of testing dictate how the results are used, qualifications of test users are needed beyond general testing competencies to interpret and apply data.
B. Characteristics of Tests: Understanding the nature and limitations of each instrument used is needed by test users.
C. Settings and Conditions of Test Use: Assessment of the quality and relevance of test user knowledge and skill to the situation is needed before deciding to test or to participate in a testing program.
D. Roles of Test Selectors, Administrators, Scorers, and Interpreters: Test users must be engaged in only those testing activities for which their training and experience qualify them.

IV. TEST SELECTION

The selection of tests should be guided by information obtained from a careful analysis of the characteristics of the population to be tested; the knowledge, skills, abilities, or attitudes to be assessed; the purposes for testing; and the eventual use and interpretation of the test scores. Use of tests should also be guided by criteria for technical quality recommended by measurement professionals (i.e., the APA/AERA/NCME "Standards for Educational and Psychological Tests" and the APA/AERA/NCME/AACD/ASHA "Code of Fair Testing Practices in Education").

A. Relate Validity to Usage:
  1. Determine the validity of a test (whether the test measures what is meant to be measured) through evidence of the constructs used in developing the test, the correlation of the test performance with other appraisals of the characteristics being measured, and/or the predictions of specified behaviors from the test performance.
  2. Determine whether a test is congruent with the user's definition of the characteristics of human performance to be appraised.
  3. Use tests for selection purposes only when they show predictive validity for the specific tasks or competencies needed in an educational or employment experience and when they maintain legal and ethical prescriptions for non-discriminatory practices in program selection, employment, or placement.

B. Use Appropriate Tests:
  1. Document tests as appropriate for the characteristics of the population to be tested.
  2. Only use tests within the level of skills of administration and interpretation possessed by the practitioner.
  3. Use tests consistent with local needs:
     a. Give attention to how the test is designed to handle variation of motivation, working speed, language facility, and experienced background among persons taking it; bias in response to its content; and effects of guessing in response to its questions.
     b. Determine whether a common test or different tests are required for accurate measurement of groups with special characteristics.
        i. Recognize that the use of different tests for cultural, ethnic, and racial groups may constitute ineffective means for making corrections for differences.
        ii. Determine whether persons or groups that use different languages should be tested in either or both languages and in some instances, tested first for bilingualism or language dominance.

C. Consider Technical Characteristics:
  1. Select only tests that have documented evidence of reliability or consistency.
  2. Select only tests that have adequate documented evidence of the effectiveness of the measure for the purpose to be served and justification of the inferences based on the results.
  3. Scrutinize standardization and norming procedures for relevance to the local population and use of the data.
  4. Use separate norms for men and women or other subgroups when empirical evidence indicates they are appropriate.
  5. Determine the degree of technical quality demanded of a test on the basis of the nature of the decisions to be made.
  6. Include ease and accuracy of the procedures for scoring, summarizing, and communicating test performance among the criteria for selecting a test.
  7. Consider practical constraints of cost, conditions, and time for testing as secondary test selection criteria.

D. Employ User Participation in Test Selection: Actively involve everyone who will be using the assessments (administering, scoring, summarizing, interpreting, making decisions) as appropriate in the selection of tests so that they are congruent with local purposes, conditions, and uses.

V. TEST ADMINISTRATION

Test administration includes procedures to ensure that the test is used in the manner specified by the test developers and that the individuals being tested are working within conditions which maximize opportunity for optimum, comparable performance.

A. Provide Proper Orientation:
  1. Inform testing candidates, parents, and institutions or agencies in the community as appropriate about the testing procedures. The orientation should make the test meaningful for the individual or group being tested, and should include the purposes of the test, the kinds of tasks it involves, how it is administered and how the scores will be reported and used.
  2. Provide persons being tested sufficient practice experiences prior to the test.
  3. Prior to testing, check all test takers' ability to record their responses adequately (e.g., in the use of machine-scorable answer sheets).
  4. Provide periodic training by qualified personnel for test administrators within agencies or institutions using tests.
  5. Review test materials and administration sites and procedures prior to the time for testing to ensure standardized conditions and appropriate response to any irregularities which may occur.

B. Use Qualified Test Administrators:
  1. Acquire any training required to administer the test.
  2. Ensure that individuals taking self-administered or self-scored instruments have the necessary understanding and competencies.

C. Provide Appropriate Testing Conditions:
  1. Ensure that the testing environment (seating, work surfaces, lighting, heating, freedom from distractions, etc.) and psychological climate are conductive to the best possible performance of the test takers.
  2. Carefully observe, record, and attach to the test record any deviation from prescribed test administration procedure.
  3. Use a systematic and objective procedure for observing and recording environmental, health, or emotional factors, or other elements which may invalidate test performance. This record should be attached to the test scores of the persons tested.
  4. Use sufficiently trained personnel to provide uniform conditions and to observe the conduct of the examinees when large groups of individuals are tested.

D. Give Proper Directions:
  1. Present each test in the manner prescribed in the test manual to ensure that it is fair to each test taker.

2. Administer standardized tests with the verbatim instructions, exact sequence and timing, and identical materials that were used in the test standardization.
3. Demonstrate verbal clarity, calmness, empathy for the examinees, and impartiality toward all being tested. Because taking a test may be a new and frightening experience or stimulate anxiety or frustration for some individuals, the examinees should attempt each task with positive application of their skills and knowledge and the expectation that they will do their best.

E. Coordinate Professional Collaboration: In settings where skill and knowledge are pooled and responsibility shared, consider the qualifications of the testing team as a whole as more important than those of individuals. However, coordination and consistency of responsibilities with expertise must be maintained.

VI. TEST SCORING

Accurate measurement of human performance necessitates adequate procedures for scoring the responses of examinees. These procedures must be audited as necessary to ensure consistency and accuracy of application.

A. Consider Accuracy and Interpretability: Select a test scoring process that maximizes accuracy and interpretability.
B. Resource Samples: Routinely rescore samples of examinee responses to monitor the accuracy of the scoring process.
C. Screen Test Results: Screen reports of test results using personnel competent to recognize unreasonable or impossible scores.
D. Verify Scores and Norms: Verify the accuracy of computation of raw scores and conversion to normative scales prior to release of such information to examinees or users of test results.
E. Communicative Deviations: Report as part of the official record any deviation from normal conditions and examinee behaviors.
F. Label Results: Clearly label the date of test administration along with the scores.

VII. TEST INTERPRETATION

Test interpretation encompasses all the ways that meaning is assigned to the scores. Proper interpretation requires knowledge about the test which can be obtained by studying its manual and other materials along with current research literature with respect to its use; no one should undertake the interpretation of scores on any test without such study.

A. Consider Reliability: Reliability is important because it is a prerequisite to validity and because the degree to which a score may vary due to measurement error is an important factor in its interpretation.
1. Estimate test stability using a reliability (or other appropriate) coefficient.

   2. Use the standard error of measurement to estimate the amount of variation due to random error in individual scores and to evaluate the precision of cut-scores in selection decisions.
   3. Consider, in relationship to the uses being made of the scores, variance components attributed to error in the reliability index.
   4. Evaluate reliability estimates with regard to factors that may have artificially raised or lowered them (e.g., test speededness, biases in population sampling).
   5. Distinguish indices of objectivity (i.e., scorer reliability) from test reliability.

B. Consider Validity: Proper test interpretation requires knowledge of the validity evidence available for the intended use of the test. Its validity for other uses is not relevant. Indeed, use of a measure for a purpose for which it was not designed may constitute misuse. The nature of the validity evidence required for a test depends upon its use.
   1. Use for Placement: Predictive validity is the usual basis for valid placement.
      a. Obtain adequate information about the programs or institutions in which the client may be placed to judge the consequences of such placement.
      b. Use all available evidence to infer the validity of an individual's score. A single test score should not be the sole basis for a placement or selection recommendation. Other items of information about an individual (e.g., teacher report, counselor opinion) frequently improve the likelihood that proper judgments and decisions will be made.
      c. Consider validity for each alternative (i.e., each placement option) when interpreting test scores and other evidence.
      d. Examine the possibility that a client's group membership (socioeconomic status, gender, subculture, etc.) may affect test performance and, consequently, validity.
      e. Estimate the probability of favorable outcomes for each possible placement before making recommendations.
      f. Consider the possibility that outcomes favorable from an institutional point of view may differ from those that are favorable from the individual's point of view.
   2. Use for Prediction: The relationship of the test scores to an independently developed criterion measure is the basis for predictive validity.
      a. Consider the reliability and validity of the criterion measure(s) used.
      b. Consider the validity of a measure in the context of other predictors available (i.e., does the test make a valid contribution to prediction beyond that provided by other measures).
      c. Use cross validation to judge the validity of prediction processes.
      d. Consider the effects of labeling, stereotyping, and prejudging people (e.g., self-fulfilling prophecies that may result from labeling are usually undesirable).
      e. If a statistically valid predictor lacks both construct and content validity, analyze the mechanism by which it operates to determine whether or not its predictive validity is spurious.

3. Use for Description: Comprehensiveness of information is fundamental to effective description, since no set of test scores completely describes an individual.
   a. Clearly identify the domain assessed by any measure and the adequacy of the content sampling procedures used in developing items.
   b. Clarify the dimensions being measured when multiple scores from a battery or inventory are used for description.
      i. Examine the content and/or construct validity of each score separately.
      ii. Consider the relative importance of each of the separate elements for interpretation.
      iii. Give appropriate weights to reflect the variabilities (e.g., standard deviations) and relationships (e.g., correlations) of scores which are to be combined.
   c. Distinguish characteristics that can be validated only empirically and those for which content specifications exist.
4. Use for Assessment of Growth: Assessment of growth or change requires valid tests as well as a valid procedure for combining them.
   a. Specifically evaluate the reliability of differences between scores as measures of change.
   b. Establish the validities of the measures used to establish change in relation to one another as well as individually.
   c. Consider comparability of intervals in scales used to assess change.
      i. Evaluate derived or extrapolated scores (e.g., grade equivalents) for possible different meanings at different score levels.
      ii. Consider problems in interpretation and comparability of tests (e.g., floor or ceiling effects, content changes from level to level, poor articulation in multilevel tests, lack of comparability of alternate forms, inadequacy of score-equating across forms, and differences in administration and timing of tests from that of their norming).
   d. Assess potential for undesirable correlations of difference scores with the measures entering into their calculations (e.g., regression toward the mean).
   e. Recognize the potential lack of comparability between norms for differences derived from norms and norms for differences derived from differences (i.e., mathematically derived norms for differences are not necessarily equivalent to norms based on distributions of actual differences).
5. Use for Program Evaluation: Assessments of group differences (between groups or within groups over time) are based on research designs which to varying degrees admit competing interpretations of the results.
   a. Use procedures in the evaluation which ensure that no factors other than those being studied have major influence on the results (i.e., internal validity).
   b. Use statistical procedures which are appropriate and have all assumptions met by the data being analyzed.
   c. Evaluate the generalizability (external validity) of the results for different individuals, settings, tests, and variables.

C. Scores, Norms, and Related Technical Features: The result of scoring a test or subtest is usually a number called a raw score which by itself is not interpretable. Additional steps are needed to translate the number directly into either a verbal description (e.g., pass or fail) or into a derived score (e.g., a standard score). Less than full understanding of these procedures is likely to produce errors in interpretation and ultimately in counseling or other uses.
   1. Examine appropriate test materials (e.g., manuals, handbooks, users' guides, and technical reports) to identify the descriptions or derived scores produced and their unique characteristics.
      a. Know the operational procedures for translating raw scores into descriptions or derived scores.
      b. Know specific psychological or educational concepts or theories before interpreting the scores of tests based on them.
      c. Consider differential validity along with equating error when different tests, different test forms, or scores on the same test administered at different times are compared.
   2. Clarify arbitrary standards used in interpretation (e.g., mastery or nonmastery for criterion-referenced tests).
      a. Recognize that when a score is interpreted based on a proportion score (e.g., percent correct), its elements are being given arbitrary weights.
      b. Recognize that the difficulty of a fixed standard (e.g., 80 percent right) varies widely and thus does not have the same meaning for different content areas and for different assessment methods.
      c. Report the number (or percentage) of items right in addition to the interpretation when it will help others understand the quality of the examinee's performance.
   3. Employ derived scores based on norms which fit the needs of the current use of the test.
      a. Evaluate whether available norm groups are appropriate as part of the process of interpreting the scores of clients.
         i. Use norms for the group to which the client belongs.
         ii. Recognize that derived scores based on different norm groups may not be comparable.
         iii. Use local norms and derived scores based on them whenever possible.
      b. Choose a score based on its intended use.
         i. Consider relative standing scores (e.g., percentile ranks) for comparison of individuals to the norm or reference group.
         ii. Consider standard or scaled scores whenever means and variances or other arithmetic operations are appropriate.
         iii. When using a statistical technique, use the test's derived score which best meets the assumptions of the analysis.

D. Administration and Scoring Variation: Stated criteria for score interpretation assume standard procedures for administering and scoring the test. Departures from standard conditions and procedures modify and often invalidate these criteria.

1. Evaluate unusual circumstances peculiar to the administration and scoring of the test.
    a. Examine reports from administrators, proctors, and scorers concerning irregularities or unusual conditions (e.g., excessive anxiety) for possible effects on test performance.
    b. Consider potential effects of examiner-examinee differences in ethnic and cultural background, attitudes, and values based on available relevant research.
    c. Consider any reports of examinee behavior indicating the responses were made on some basis other than that intended.
    d. Consider differences among clients in their reaction to instructions about guessing and scoring.
2. Evaluate scoring irregularities (e.g., machine scoring errors) and bias and judgment effects when subjective elements enter into scoring.

VIII. COMMUNICATING TEST RESULTS

The responsible counselor or other practitioner reports test data with a concern for the individual's need for information and the purposes of the information. There must also be protection of the right of the person tested to be informed about how the results will be used and what safeguards exist to prevent misuse (right to information) and about who will have access to the results (right to privacy).

A. Decisions About Individuals: Where test data are used to enhance decisions about an individual, the practitioner's responsibilities include:
1. Limitations on Communication:
    a. Inform the examinee of possible actions that may be taken by any person or agency who will be using the results.
    b. Limit access to users specifically authorized by the law or by the client.
    c. Obtain the consent of the examinee before using test results for any purpose other than those advanced prior to testing.
2. Practitioner Communication Skills:
    a. Develop the ability to interpret test results accurately before attempting to communicate them.
    b. Develop appropriate communication skills, particularly with respect to concepts that are commonly misunderstood by the intended audience, before attempting to explain test results to clients, the public, or other recipients of the information.
3. Communication of Limitations of the Assessment:
    a. Inform persons receiving test information that scores are not perfectly accurate and indicate the degree of inaccuracy in some way, such as by reporting score intervals.
    b. Inform persons receiving test information of any circumstances that could have affected the validity or reliability of the results.
    c. Inform persons receiving test information of any factors necessary to understand potential sources of bias for a given test result.

d. Communicate clearly that test data represent just one source of information and should rarely, if ever, be used alone for decision making.

4. Communication of Client Rights:

a. Provide test takers or their parents or guardians with information about any rights they may have to obtain test copies and/or their completed answer sheets, to retake tests, to have tests rescored, or to cancel test scores.

b. Inform test takers or their parents or guardians about how long the test scores will remain on file along with the persons to whom, and circumstances under which, they may be released.

c. Describe the procedures test takers or their parents or guardians may use to register complaints or have problems resolved.

B. Decisions About Groups: Where standardized test data are being used to describe groups for the purpose of evaluation, the practitioner's responsibilities include:

1. Background Information:

a. Identify the purposes for which the reported data are appropriate.

b. Include additional information (e.g., population characteristics) if it can improve accuracy of understanding.

2. Averages and Norms:

a. Clarify the amount of meaning that can be attached to differences between groups (e.g., statistical significance should not be taken as a judgment of importance).

b. Qualify norms based on their appropriateness for the group being tested.

3. Use obsolescence schedules so that stored data are systematically relocated to historical files or destroyed.

4. Process data used for research or program evaluation to assure individual anonymity (e.g., released only in aggregated form).

5. Political Usage:

a. Emphasize that test data should be used only for the test's stated purposes.

b. Public release of test information provides data for many purposes. Take steps to minimize those which may be adverse to the interests of those tested.

6. Agency Policies:

a. Advocate agency test-reporting policies designed to benefit the groups being measured.

b. Advocate the establishment of procedures for periodic review of test use.

IX. EXTENSIONS OF THESE PRINCIPLES

This statement is intended to address current and emerging problems and concerns that are generic to all AACD divisions, branches, and regions by formulating principles that are specific enough to serve as a template for more closely focused statements addressed to specific situations. Individual divisions, branches, and regions are encouraged to elaborate upon this statement to reflect principles, procedures, and examples appropriate to their members.

Code of Fair Testing Practices in Education

Prepared by
The Joint Committee on Testing Practices

The Code of Fair Testing Practices in Education states the major obligations to test takers of professionals who develop or use educational tests. The Code is meant to apply broadly to the use of tests in education (admissions, educational assessment, educational diagnosis, and student placement). The Code is not designed to cover employment testing, licensure or certification testing, or other types of testing. Although the Code has relevance to many types of educational tests, it is directed primarily at professionally developed tests such as those sold by commercial test publishers or used in formally administered testing programs. The Code is not intended to cover tests made by individual teachers for use in their own classrooms.

The Code addresses the roles of test developers and test users separately. Test users are people who select tests, commission test development services, or make decisions on the basis of test scores. Test developers are people who actually construct tests as well as those who set policies for particular testing programs. The roles may, of course, overlap as when a state education agency commissions test development services, sets policies that control the test development process, and makes decisions on the basis of the test scores.

The Code presents standards for educational test developers and users in four areas:

A. Developing/Selecting Tests
B. Interpreting Scores
C. Striving for Fairness
D. Informing Test Takers

Organizations, institutions, and individual professionals who endorse the Code commit themselves to safeguarding the rights of test takers by following the principles listed. The Code is intended to be consistent with the relevant parts of the *Standards for Educational and Psychological Testing* (AERA, APA,

NCME, 1985). However, the Code differs from the Standards in both audience and purpose. The Code is meant to be understood by the general public; it is limited to educational tests; and the primary focus is on those issues that affect the proper use of tests. The Code is not meant to add new principles over and above those in the Standards or to change the meaning of the Standards. The goal is rather to represent the spirit of a selected portion of the Standards in a way that is meaningful to test takers and/or their parents or guardians. It is the hope of the Joint Committee that the Code will also be judged to be consistent with existing codes of conduct and standards of other professional groups who use educational tests.

A. DEVELOPING/SELECTING APPROPRIATE TESTS*

Test developers should provide the information that test users need to select appropriate tests.

Test users should select tests that meet the purpose for which they are to be used and that are appropriate for the intended test-taking populations.

Test Developers Should:	**Test Users Should:**
1. Define what each test measures and what the test should be used for. Describe the population(s) for which the test is appropriate.	1. First define the purpose for testing and the population to be tested. Then, select a test for that purpose and that population based on a thorough review of the available information.
2. Accurately represent the characteristics, usefulness, and limitations of tests for their intended purposes.	2. Investigate potentially useful sources of information, in addition to test scores, to corroborate the information provided by tests.
3. Explain relevant measurement concepts as necessary for clarity at the level of detail that is appropriate for the intended audience(s).	3. Read the materials provided by test developers and avoid using tests for which unclear or incomplete information is provided.
4. Describe the process of test development. Explain how the content and skills to be tested were selected.	4. Become familiar with how and when the test was developed and tried out.
5. Provide evidence that the test meets its intended purpose(s).	5. Read independent evaluations of a test and of possible alternative measures. Look for evidence required to support the claims of test developers.

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*Many of the statements in the Code refer to the selection of existing tests. However, in customized testing programs test developers are engaged to construct new tests. In those situations, the test development process should be designed to help ensure that the completed tests will be in compliance with the Code.

6. Provide either representative samples or complete copies of test questions, directions, answer sheets, manuals, and score reports to qualified users.	6. Examine specimen sets, disclosed tests or samples of questions, directions, answer sheets, manuals, and score reports before selecting a test.
7. Indicate the nature of the evidence obtained concerning the appropriateness of each test for groups of different racial, ethnic, or linguistic backgrounds who are likely to be tested.	7. Ascertain whether the test content and norms group(s) or comparison group(s) are appropriate for the intended test takes.
8. Identify and publish any specialized skills needed to administer each test and to interpret scores correctly.	8. Select and use only those tests for which the skills needed to administer the test and interpret scores correctly are available.

B. INTERPRETING SCORES

Test developers should help users interpret scores correctly.

Test users should interpret scores correctly.

Test Developers Should:	**Test Users Should:**
9. Provide timely and easily understood score reports that describe test performance clearly and accurately. Also explain the meaning and limitations of reported scores.	9. Obtain information about the scale used for reporting scores, the characteristics of any norms or comparison group(s), and the limitations of the scores.
10. Describe the population(s) represented by any norms or comparison group(s), the dates the data were gathered, and the process used to select the samples of test takers.	10. Interpret scores taking into account any major differences between the norms or comparison groups and the actual test takers. Also take into account any differences in test administration practices or familiarity with the specific questions in the test.
11. Warn users to avoid specific, reasonably anticipated misuses of test scores.	11. Avoid using tests for purposes not specifically recommended by the test developer unless evidence is obtained to support the intended use.
12. Provide information that will help users follow reasonable procedures for setting passing scores when it is appropriate to use such scores with the test.	12. Explain how any passing scores were set and gather evidence to support the appropriateness of the scores.

13. Provide information that will help users gather evidence to show that the test is meeting its intended purpose(s).	13. Obtain evidence to help show that the test is meeting its intended purpose(s).

C. STRIVING FOR FAIRNESS

Test developers should strive to make tests that are as fair as possible for test takers of different races, gender, ethnic backgrounds, or handicapping conditions.	*Test users should select tests that have been developed in ways that attempt to make them as fair as possible for test takers of different races, gender, ethnic backgrounds, or handicapping conditions.*

Test Developers Should:	**Test Users Should:**
14. Review and revise test questions and related materials to avoid potentially insensitive content or language.	14. Evaluate the procedures used by test developers to avoid potentially insensitive content or language.
15. Investigate the performance of test takers of different races, gender, and ethnic backgrounds when samples of sufficient size are available. Enact procedures that help to ensure that differences in performance are related primarily to the skills under assessment rather than to irrelevant factors.	15. Review the performance of test takers of different races, gender, and ethnic backgrounds when samples of sufficient size are available. Evaluate the extent to which performance differences may have been caused by inappropriate characteristics of the test.
16. When feasible, make appropriately modified forms of tests or administration procedures available for test takers with handicapping conditions. Warn test users of potential problems in using standard norms with modified tests or administration procedures that result in noncomparable scores.	16. When necessary and feasible, use appropriately modified forms of tests or administration procedures for test takers with handicapping conditions. Interpret standard norms with care in the light of the modifications that were made.

D. INFORMING TEST TAKERS

Under some circumstances, test developers have direct communication with test takers. Under other circumstances, test users communicate directly with test takers. Whichever group communicates directly with test takers should provide the information described below.

Test Developers or Test Users Should:

17. When a test is optional, provide test takers or their parents/guardians with information to help them judge whether the test should be taken, or if an available alternative to the test should be used.
18. Provide test takers the information they need to be familiar with the coverage of the test, the types of question formats, the directions, and appropriate test-taking strategies. Strive to make such information equally available to all test takers.

Under some circumstances, test developers have direct control of tests and test scores. Under other circumstances, test users have such control. Whichever group has direct control of tests and test scores should take the steps described below.

Test Developers or Test Users Should:

19. Provide test takers or their parents/guardians with information about rights test takers may have to obtain copies of tests and completed answer sheets, retake tests, have tests rescored, or cancel scores.
20. Tell test takers or their parents/guardians how long scores will be kept on file and indicate to whom and under what circumstances test scores will or will not be released.
21. Describe the procedures that test takers or their parents/guardians may use to register complaints and have problems resolved.

Note: The membership of the Working Group that developed the Code of Fair Testing Practices in Education and of the Joint Committee on Testing Practices that guided the Working Group was as follows:

Theodore P. Bartell
John R. Bergan
Esther E. Diamond
Richard P. Duran
Lorraine D. Eyde
Raymond D. Fowler
John J. Fremer
  (Co-chair, JCTP and Chair, Code Working Group)
Edmund W. Gordon
Jo-Ida C. Hansen
James B. Lingwall
George F. Madaus
  (Co-chair, JCTP)
Kevin L. Moreland
Jo-Ellen V. Perez
Robert J. Solomon
John T. Stewart
Carol Kehr Tittle
  (Co-chair, JCTP)
Nicholas A. Vacc
Michael J. Zieky
Debra Boltas and Wayne Camera of the American Psychological Association served as staff liaisons.

The Code has been developed by the Joint Committee on Testing Practices, a cooperative effort of several professional organizations, that has as its aim the advancement, in the public interest, of the quality of testing practices. The Joint Committee was initiated by the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education. In addition to these three groups, the American Association for Counseling and Development/Association for Measurement and Evaluation in Counseling and Development, and the American Speech-Language-Hearing Association are now also sponsors of the Joint Committee.

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Multicultural Assessment Standards: A Compilation for Counselors

Compiled by
Dale J. Prediger

PURPOSE

The Association for Assessment in Counseling (AAC), a division of the American Counseling Association (ACA), presents this compilation of professional standards and guidelines to further the realization of "Diversity, Development, and Dignity"—ACA's special theme for 1993. Although AAC believes that tests, inventories, and other assessment instruments can be beneficial to members of all populations, we recognize that the increasing diversity in counselee backgrounds presents special challenges. The standards and guidelines assembled here (hereafter called "standards") address many of those challenges.

A number of the standards in this compilation have relevance for the use of assessment instruments in psychological screening, personnel selection, and placement. However, they were selected because they have special relevance for **counseling**. The standards also have special relevance for **multicultural populations**. Standards that apply in the same way to all populations (e.g., general standards for norming, scaling, reliability, and validity) are not included. (Readers should consult the publications listed in the Source Documents section.)

AAC expects all counselors to subscribe to the standards in this compilation. AAC also urges counselor educators to include this compilation in programs preparing the "culturally competent counselor" (Sue, Arredondo, & McDavis, 1992, p. 477; see Source Document D listed below). Finally, AAC supports the Association for Multicultural Counseling and Development (AMCD) in advocating the need for "a multicultural approach to assessment, practice, training, and research" (Sue et al., 1992, p. 477).

DEFINITION OF MULTICULTURAL POPULATIONS

Multicultural counseling standards were recently proposed by the AMCD Professional Standards Committee. Sue et al. (1992) note that these standards "refer primarily to four groups in our society: African Americans, American Indians, Asian Americans, and Hispanics and Latinos. Many of these standards, however, have had useful relevance to other oppressed groups as well" (p. 477). Sue et al. also note that "to some extent all counseling is cross-cultural, but . . . the term can be defined so broadly that it dilutes the focus on racial and ethnic concerns (a primary one being racism) and allows counseling professionals to avoid and omit dealing with the four major minority groups in our society" (p. 478).

The Sue et al. (1992) delineation of "multicultural" served as the working definition used in assembling the assessment-related standards presented here. AAC recognizes that these standards also apply to other groups.

CLASSIFICATION OF STANDARDS BY ASSESSMENT TASK

Thirty-four standards relevant to multicultural populations were identified in a reading of the five publications listed in the Source Documents section. To enhance the usefulness of this compilation, the standards have been grouped according to assessment-related task. (Since several of the standards are relevant to more than one task, the grouping was based on primary relevance—as judged by this publication's editor.) The number of standards per task is shown in parentheses in the list that follows.

- Selection of Assessment Instruments: Content Considerations (10)
- Selection of Assessment Instruments: Norming, Reliability, and Validity Considerations (9)
- Administration and Scoring of Assessment Instruments (4)
- Use/Interpretation of Assessment Results (11)

Nineteen of the 34 standards address the selection of assessment instruments appropriate to multicultural populations, an emphasis which appears to be justified. If an instrument is inappropriate, counseling based on an interpretation of results will likely be inappropriate.

When judging the appropriateness of a given instrument for use with multicultural groups, counselors typically must rely on information that the publisher is professionally obligated to provide (e.g., via user manuals and technical handbooks). In the absence of such information, counselors should contact the publisher directly or look for a different instrument.

THE STANDARDS

The standards are grouped by major assessment related task. Within each task, they are grouped by source (see Source Documents section).

Selection of Assessment Instruments: Content Considerations

- *Code of Fair Testing Practices in Education*
    1. "Define the purpose for testing and the population [e.g., multicultural] to be tested. Then, select a test for that purpose and that population based on a thorough review of the available information." (Section A-1)
    2. "Evaluate the procedures used by test developers to avoid potentially insensitive content or language." (Section C-14)
- *Responsibilities of Users of Standardized Tests*
    1. "Determine the limitations to testing created by an individual's age, racial, sexual, ethnic, or cultural background; or other characteristics." (Section II-B3)
    2. "Give attention to how the test is designed to handle variation of motivation, working speed, language facility, and experimental background among persons taking it; [and] bias in response to its content." (Section IV-B3a)
    3. "Determine whether a common test or different tests are required for accurate measurement of groups with special characteristics .... Recognize that the use of different tests for cultural, ethnic, and racial groups may constitute ineffective means for making corrections for differences." (Section IV-B3bi)
    4. "Determine whether persons or groups that use different languages should be tested in either or both languages and in some instances, tested first for bilingualism or language dominance." (Section IV-B3bii)
- *Standards for Educational and Psychological Testing* (including what counselors should expect of test developers)
    1. "When a test is recommended for use with linguistically diverse test takers, test developers and publishers should provide the information necessary for appropriate test use and interpretation. (*Primary*)" (Standard 13.3)
    2. "Counselors should review interpretive materials for tests to ensure that case studies and examples are not limited to illustrations of people in traditional roles. (*Secondary*)" (Section 9.9)
    3. "When selecting the type and content of items for tests and inventories, ... consider the content and type in relation to cultural backgrounds and prior experiences of the variety of ethnic, cultural, age, and gender groups represented in the intended population of test takers. (*Conditional*)" (Standard 3.5)
    4. "When previous research indicates the need for studies of item or test performance differences for a particular kind of test for members of age, ethnic, cultural, and gender groups in the population of test takers, such studies should be conducted as soon as is feasible. Such research should be designed to detect and eliminate aspects of test design, content, or format that might bias test scores for particular groups. (*Conditional*)" (Standard 3.10)

Selection of Assessment Instruments: Norming, Reliability, and Validity Considerations

- *Code of Fair Testing Practices in Education*

1. "Ascertain whether the test content and norms group(s) or comparison group(s) are appropriate for the intended test takers [from different racial, ethnic, or linguistic backgrounds]." (Section A-7)
2. "Select tests that have been developed in ways that attempt to make them as fair [e.g., reliable and valid] as possible for test takers of different races, gender, [or] ethnic backgrounds." (Section C, general)
3. "Review [publisher-provided data on] the performance of test takers of different races, gender, and ethnic backgrounds when samples of sufficient size are available. Evaluate the extent to which performance differences may have been caused by inappropriate characteristics of the test." (Section C-15)

- *Responsibilities of Users of Standardized Tests*
  1. "Document tests as appropriate [e.g., as being reliable and valid] for the characteristics of the population to be tested." (Section IV-B1)
  2. "Scrutinize standardization and norming procedures for relevance to the local population and use of the data." (Section IV-C3)
- *Standards for Educational and Psychological Testing*
  1. "Criterion-related evidence of validity for populations similar to that for which the test will be used should be available when recommendations or decisions are presented as having an actuarial, as well as a clinical, basis. (*Primary*)" (Standard 7.6)
  2. "Counselors should examine test manuals for any available information about how suggested or implied career options (i.e., the vocational program or occupation suggested by the highest scores on the test) are distributed for samples of the typical respondents of each gender and relevant racial or ethnic groups. (*Primary*)" (Standard 9.5)
  3. "When a test is translated from one language or dialect to another, its reliability and validity for the uses intended in the linguistic groups to be tested should be established. (*Primary*)" (Standard 13.4)
  4. "Investigations of criterion-related validity . . . should include, where feasible, a study of the magnitude of predictive bias due to differential prediction for those groups for which previous research has established a substantial prior probability of differential prediction for the particular kind of test in question. (*Conditional*)" (Standard 1.20)

Administration and Scoring of Assessment Instruments

- *Responsibilities of Users of Standardized Tests*
  1. "Demonstrate verbal clarity, calmness, empathy for the examinees, and impartiality toward all being tested. . . . Taking a test may be a new and frightening experience or stimulate anxiety or frustration for some individuals." (Section V-D3)
  2. "Evaluate unusual circumstances peculiar to the administration and scoring of the test. . . . Consider potential effects of examiner-examinee differences in ethnic and cultural background, attitudes, and values based on available relevant research." (Section VII-D1b)
- *Standards for Educational and Psychological Testing*
  1. "For non-native English speakers or for speakers of some dialects of English, testing should be designed to minimize threats to test reliability

and validity that may arise from language differences. (*Primary*)" (Standard 13.1)
2. "Linguistic modifications recommended by test publishers should be described in detail in the test manual. (*Primary*)" (Standard 13.2)

Use/Interpretation of Assessment Results

- *Code of Fair Testing Practices in Education*
  1. "Interpret scores taking into account any major differences between the norms or comparison groups and the actual test takers. Also take into account any differences in . . . familiarity with the specific questions in the test." (Section B-10)
  2. "Describe the procedures that test takers or their parents/guardians may use to register complaints and have problems resolved." (Section D-21)
- *Responsibilities of Users of Standardized Tests*
  1. "Examine the possibility that a client's group membership (socioeconomic status, gender, subculture, etc.) may affect test performance and, consequently, validity." (Section VII-B1d)
  2. "Evaluate whether available norm groups are appropriate as part of the process of interpreting the scores of clients. . . . Use norms for the group to which the client belongs." (Section VII-C3a)
- *Standards for Educational and Psychological Testing*
  1. "In educational, clinical, and counseling applications, test administrators and users should not attempt to evaluate test takers whose special characteristics—ages, handicapping conditions, or linguistic, generational, or cultural backgrounds—are outside the range of their academic training or supervised experience. A test user faced with a request to evaluate a test taker whose special characteristics are not within his or her range of professional experience should seek consultation regarding test selection, necessary modifications of testing procedures, and score interpretation from a professional who has had relevant experience. (*Primary*)" (Standard 6.10)
- *Multicultural Counseling Competencies and Standards*
  1. "Culturally skilled counselors understand how race, culture, ethnicity, and so forth may affect personality formation, [test/inventory scores], vocational choices, manifestation of psychological disorders, help-seeking behavior, and the appropriateness of counseling approaches." (Section II-B2)
  2. "Culturally skilled counselors have knowledge of the potential bias in assessment instruments and use procedures and interpret findings keeping in mind the cultural and linguistic characteristics of the clients." (Section III-B3)
  3. "Culturally skilled counselors have training and experience in the use of traditional assessment and testing instruments. They not only understand the technical aspects of the instruments but are also aware of the cultural limitations. This allows them to use test instruments for the welfare of the diverse clients." (Section III-C5)
- *Ethical Standards of ACA*
  1. "The member must ensure that members of various ethnic, racial, religious, disability, and socioeconomic groups have equal access to com-

puter applications used to support counseling services and that the content of available computer applications [e.g., a test interpretaton] does not discriminate against the groups described above." (Section B-19)

2. "The member must provide specific orientation or information to the examinee(s) prior to and following the test administration so that the results of testing may be placed in proper perspective with other relevant factors. In so doing, the member must recognize the effects of socioeconomic, ethnic, and cultural factors on test scores." (Section C-1)
3. "The member must proceed with caution when attempting to evaluate and interpret the performance of minority group members or other persons who are not represented in the norm group on which the instrument was standardized." (Section C-12)

SOURCE DOCUMENTS FOR STANDARDS

The first three source documents focus directly on assessment instruments. The last two address assessment in the context of broader professional concerns.

A. *Code of Fair Testing Practices in Education.* The *Code* was published in 1988 by the Joint Committee on Testing Practices. (ACA has been represented on this committee since 1988.) Single copies are available at no charge from the Joint Committee on Testing Practices, c/o American Psychological Association, 750 First Street N.E., Washington, DC 20002-4242.

B. *Responsibilities of Users of Standardized Tests* (the "RUST Statement"). This ACA-AAC policy statement was adopted in March 1989. Single copies are available at no charge from ACA, 5999 Stevenson Avenue, Alexandria, VA 22304-3300. A RUST Statement precursor focusing on "minority groups" was published in the July 1972 issue of *Measurement and Evaluation in Guidance*. The first edition of the RUST Statement appeared in the October 7, 1978, issue of *Guidepost*; the most recent edition appeared in the May 11, 1989, issue of *Guidepost*.

C. *Standards for Educational and Psychological Testing.* The "Joint Standards" (a cooperative effort of the American Educational Research Association, American Psychological Association, and National Council on Measurement in Education) were published in 1985. AAC members had a major role in preparing the section on test use in counseling. Order information can be obtained from the American Psychological Association (see Source A for address). (*Note.* The terms *primary*, *secondary*, and *conditional*—which follow each standard—are defined in the Joint Standards.)

D. *Multicultural Counseling Competencies and Standards: A Call to the Profession.* This journal article by Sue, Arredondo, and McDavis contains a list of standards prepared by the Professional Standards Committee of the Association for Multicultural Counseling and Development. The article appeared in the March/April 1992 issue of the *Journal of Counseling and Development*.

E. *Ethical Standards of the American Counseling Association.* ACA's ethical standards were adopted in March, 1988. Ordering information can be obtained from ACA (see Source B for address). The standards were published in the September, 1988, issue of the *Journal of Counseling and Development*. In 1990, ACA published the *Ethical Standards Casebook*, which includes descriptions of everyday incidents and related ethical considerations. In addition, the *Casebook* has a chapter titled "Ethical Issues in Multicultural Counseling."

BACKGROUND OF THIS PUBLICATION

Work on this publication was prompted by a request from Jo-Ida Hansen, Chair of the 1991–92 Committee on Testing, American Association for Counseling and Developing (now ACA). The publication was prepared by Dale Prediger (1992–93 AAC President-Elect) on behalf of the AAC Executive Council. Several members of the Executive Council and Pat Nellor Wickwire (Chair of AAC's Committee on Multicultural Concerns) provided helpful suggestions.

Although a compilation of existing multicultural assessment standards can further the realization of "Diversity, Development, and Dignity," it is only a beginning. AAC's Committee on Multicultural Concerns is currently working on much broader, more proactive documents. Suggestions are invited and may be mailed to: AAC President, c/o American Counseling Association, 5999 Stevenson Avenue, Alexandria, VA 22304-3300).

APPENDIX D

A Counselor's Guide User's Matrix

A Counselor's Guide User's Matrix:

An Alphabetical Listing of Career Assessment Instruments by Category and Type of Use

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The User's Matrix is an alphabetized listing of all 297 instruments either reviewed or briefly described in the third edition of *A Counselor's Guide*. These instruments are identified by *Characteristics* assessed, Level of *Use*, and whether or not the instruments are particularly appropriate for *Disabled or Disadvantaged* populations. Instruments in boldface type (52) are reviewed and may be located using the Table of Contents. All other instruments (245) are briefly described in the Additional Instruments chapter under the appropriate category. The exact page number for either reviewed or briefly described instruments may be obtained from the Index.

The *Characteristics* used to describe the instruments do not directly correspond to those used to group them for either the reviews or brief descriptions. However, they are categorical descriptions of what the instruments are intended to measure. The Values category includes instruments that assess Job Satisfaction and Environments. Many instruments fit more than one category.

The *Use* categories are based on level of schooling or setting for those uses beyond four years of college. The Adult Education/Training category includes instruments used with adults who are receiving counseling for education, training or job change outside the traditional college environment. The Business & Industry/Employment category describes instruments which would be administered by or for employers who would use the results to make hiring or advancement decisions.

The *Disabled or Disadvantaged* Category is listed separately from those that designate either characteristics assessed or level of use. Instruments identified here may be appropriate for individuals with particular disabilities or academic, economic or social disadvantages.

The reader may find the matrix useful to provide a quick overview of the instruments, by name, which are available to assess particular characteristics. Furthermore, an initial judgment about an instrument's fit for an intended population can also be made.

INSTRUMENT NAME	CHARACTERISTICS: Achievement	Aptitude	Interest	Values/Satisfaction/Environments	Career Development/Maturity	Personality	USE: Elementary School	Junior High/Middle School	Senior High School	2-Year or 4-Year College	Adult Education/Training	Business & Industry/Employment	Disabled or Disadvantaged
ACT Career Planning Program (CPP)		•	•					•	•	•	•		
Adaptability Test		•							•			•	•
Adult Basic Learning Exam (ABLE)	•									•	•	•	•
Adult Career Concerns Inventory (ACCI)					•				•	•	•	•	
Adult Personality Inventory (API)						•				•	•	•	
Applied Biological and Agribusiness Interest Inventory			•					•					
Apticom	•	•	•					•	•		•	•	•
Aptitudes		•							•				
Armed Services Vocational Aptitude Battery (ASVAB-CEP)		•	•	•					•	•			
Assessment of Career Decision Making (ACDM)					•				•	•			
Ball Aptitude Battery (BAB)		•							•	•	•	•	
Becker Work Adjustment Profile (BWAP)					•						•	•	•
Bennett Hand Tool Dexterity Test (BHTDT)		•							•		•	•	•
Bennett Mechanical Comprehension Test (BMCT)		•							•	•	•	•	

California Life Goals Evaluation Schedules				*					*	*	*	*	
California Psychological Inventory (CPI)						*			*	*	*	*	
Campbell Interest & Skills Survey (CISS)			*						*	*		*	
Canadian Occupational Interest Inventory (COII)			*							*	*	*	
Career Action Inventory					*					*	*	*	
Career Adaptive Behavior Inventory (CAB)	*	*	*		*	*	*	*	*				*
Career and Vocational Form of the SOI-LA Basis Test		*						*	*	*	*	*	
Career and Vocational Interest Inventory			*					*	*	*	*		
Career Area Interest Checklist			*						*				
Career Assessment Battery (CAB)			*					*	*	*	*		*
Career Assessment Inventory (CAI)			*						*	*	*	*	
Career Assessment Program: Aptitude Based Career Decision (ABCD)		*						*	*	*	*	*	
Career Assessment Program: Interest Based Career Decision (IBCD)			*				*	*	*	*	*	*	
Career Attitudes and Strategies Inventory (CASI)					*					*	*	*	
Career Awareness Inventory (CAI)					*		*	*	*				
Career Beliefs Inventory (CBI)					*			*	*	*	*	*	
Career Compass			*					*	*				
Career Decision Profile					*				*	*	*		
Career Decision Scale (CDS)					*				*	*			
Career Development Inventory (CDI)					*			*	*	*			
Career Development Profile					*							*	
Career Directions Inventory (CDI)			*						*	*	*		
Career Education Readiness Test					*		*						
Career Evaluation Systems Series 100–300	*	*				*			*	*	*	*	*
Career Exploration Inventory (CEI)			*						*	*	*		

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INSTRUMENT NAME	CHARACTERISTICS						USE						
	Achievement	Aptitude	Interest	Values/Satisfaction/Environments	Career Development/Maturity	Personality	Elementary School	Junior High/Middle School	Senior High School	2-Year or 4-Year College	Adult Education/Training	Business & Industry/Employment	Disabled or Disadvantaged
Career Exploration Profile (CEP)		•	•						•	•	•	•	
Career Exploration Series (CES)			•					•	•	•	•		
Career Finder			•				•	•	•	•	•		
Career Guidance Inventory			•					•	•	•			
Career Interest Inventory (CII)			•					•	•	•	•		
Career Interests (SCS)			•							•	•		
Career Interests (Conover)			•						•	•	•		
Career Interest Survey			•						•				
Career Interest Test (CIT)			•					•	•	•	•		
Career Inventories for the Learning Disabled (CILD)		•	•			•			•	•	•		•
Career Key (CK)			•						•	•	•		
Career Leverage Inventory					•							•	
Career Mastery Inventory (CMAS)					•				•	•	•	•	
Career Maturity Inventory (CMI)					•			•	•	•			

Career Occupational Preference System Interest Inventory (COPS)			*					*	*	*	*		
Career Orientation and Planning Profile (COPP)			*					*	*	*	*		
Career Orientation Placement and Evaluation Survey (COPES)				*				*	*	*	*		
Career Path Survey					*				*	*	*		
Career Planning System (CPS)			*					*	*	*	*		
Career Programs Assessment (CPAt)		*								*	*		
Career Skills Assessment Program					*				*	*	*		
Career Suitability Profile						*					*	*	
Career Survey		*	*					*	*	*	*		
Career Targets			*					*	*				
Career Values Card Sort Kit				*						*	*	*	
Career Values Scale				*						*	*	*	
Chronicle Career Quest (CCQ)			*					*	*				
Clerical Abilities Battery (CAB)	*	*								*	*	*	
Clerical Skills Series (CSS)	*	*							*	*	*	*	
College Major and Vocational Program Selector			*						*	*			
College Major Card Sort			*					*	*	*			
College Major Interest Inventory (CMII)			*						*	*			
Common-Metric Questionnaire (CMQ)				*								*	
Comprehensive Ability Battery (CAB)		*							*	*	*	*	
Comprehensive Career Assessment Scale					*		*	*	*				
Comprehensive Occupational Assessment and Training System (COATS)	*	*	*		*				*		*		*
Computer Aptitude, Literacy, and Interest Profile (CALIP)	*	*								*	*	*	*
Computer Competence Tests (CCT)	*	*								*	*	*	
Computer Operator Aptitude Battery (COAB)		*								*	*	*	

INSTRUMENT NAME	CHARACTERISTICS						USE						
	Achievement	Aptitude	Interest	Values/Satisfaction/Environments	Career Development/Maturity	Personality	Elementary School	Junior High/Middle School	Senior High School	2-Year or 4-Year College	Adult Education/Training	Business & Industry/Employment	Disabled or Disadvantaged
Computer Programmer Aptitude Battery (CPAB)		•								•	•	•	
Computerized Career Assessment and Planning Program (CCAPP)					•				•				
Crawford Small Parts Dexterity Test (CSPDT)		•							•		•	•	•
Curtis Interest Scale			•						•	•	•		
Customer Service Skills Assessment Program	•								•	•	•	•	
Deal-Me-In			•						•	•	•		
Differential Aptitude Tests (DAT)		•						•	•	•	•	•	
Dvorine Color Vision Test		•							•	•	•	•	
Educational Interest Inventory, Revised Edition (EII)			•						•	•	•		
Edwards Personal Preference Schedule (EPPS)						•				•	•	•	
Emerging Occupations Interest Inventory			•					•	•	•	•		
Employability Attitudes				•					•	•	•	•	
Employee Aptitude Survey (EAS)		•									•	•	
Employment Barrier Identification Scale (EBIS)	•				•								•

Employment Readiness Scale				•					•	•	•	•	
ETSA Tests		•							•	•	•	•	•
Experience Exploration			•					•	•	•	•		
Explore	•							•					
Explore the World of Work (E-WOW)			•								•		
Exploring Career Options (ECO)						•					•	•	
Flanagan Aptitude Classification Test (FACT)		•							•	•	•	•	•
Flanagan Industrial Tests (FIT)		•									•	•	•
Fleishman Job Analysis Survey (F-JAS)				•								•	
Florida International Diagnostic-Prescriptive Vocational Competency Profile	•	•			•			•	•		•		•
Forer Vocational Survey: Men-Women						•			•	•	•		
Fundamental Interpersonal Relations Orientation-Behavior (Firo-B)						•			•	•	•	•	
Geist Picture Interest Inventory			•					•	•		•		•
General Clerical Test (GCT)		•							•	•	•	•	
Gordon Occupational Checklist II			•					•	•	•	•		
Gordon Personal Profile-Inventory (GPP-I)						•			•	•	•	•	
Group Interest Sort			•				•						•
Guilford-Zimmerman Aptitude Survey		•								•	•	•	•
Guilford-Zimmerman Interest Inventory			•	•						•	•	•	
Guilford-Zimmerman Temperament Survey (GZTS)						•			•	•	•	•	
Hackman-Gaither Interest Inventory			•					•	•	•	•		
Hall Occupational Orientation Inventory (HALL)				•			•	•	•	•	•		
Harrington-O'Shea Career Decision-Making System (CDM)			•					•	•	•	•		
Hay Aptitude Test Battery		•									•	•	
High School Career-Course Planner			•					•	•				

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INSTRUMENT NAME	CHARACTERISTICS						USE						
	Achievement	Aptitude	Interest	Values/Satisfaction/Environments	Career Development/Maturity	Personality	Elementary School	Junior High/Middle School	Senior High School	2-Year or 4-Year College	Adult Education/Training	Business & Industry/Employment	Disabled or Disadvantaged
How Well Do You Know Your Interests?			*						*	*	*		
Individual Career Exploration (ICE)			*				*	*	*				*
Individual Style Survey (ISS)				*					*	*	*	*	
Industrial Reading Test (IRT)	*	*							*	*	*	*	
Interest, Determination, Exploration & Assessment System (IDEAS)			*					*	*		*		*
Intuitive Mechanics		*							*	*	*	*	
Inventory for Counseling and Development (ICD)						*				*			
Inventory of Interests			*					*	*	*	*		
IPI Aptitude-Intelligence Test Series		*				*						*	
It's in the Cards			*						*	*	*		
Jackson Personality Inventory (JPI)						*			*	*	*	*	
Jackson Vocational Interest Survey (JVIS)			*						*	*	*		
Jenkins Activity Survey (JAS)						*						*	
Jewish Employment Vocational Service Work Sample System (JEVS)		*							*		*		*

Job Awareness Inventory (JAI)					*			*	*				*
Job Descriptive Index, Revised (JDI Rev)				*							*	*	
Job Effectiveness Prediction System (JEPS)	*	*										*	
Job Search Assessment					*			*	*	*	*		
Job Style Indicator (JSI)				*							*	*	
JOBTAP II	*	*	*						*	*	*	*	
Judgement of Occupational Behavior-Orientation (JOB-O)			*				*	*	*	*	*		*
Key Educational Vocational Assessment System (KEVAS)	*	*	*			*			*	*	*		*
Knowledge of Occupations Test					*				*				
Kuder Career Development Inventory			*						*	*	*		
Kuder General Interest Survey (Kuder E)			*				*	*	*	*	*		
Kuder Occupational Interest Survey (Kuder DD)			*						*	*	*		
Learning Styles Inventory						*	*	*	*	*	*		*
Manipulative Aptitudes Test (MAT)		*							*	*	*	*	*
McCarron-Dial System (MDS)		*				*		*	*		*		*
McQuarrie Test for Mechanical Ability (MTMA)		*						*	*	*	*	*	
Mechanical Movements		*								*	*	*	*
Meyer-Kendall Assessment Survey (MKAS)						*						*	
Micro-Tower		*							*		*		*
Microcomputer Evaluation and Screening Assessment (MESA)		*	*						*	*	*		*
Microcomputer Evaluation of Career Areas (MECA)		*	*					*	*				*
Milwaukee Academic Interest Inventory			*						*	*			
Minnesota Clerical Test (MCT)		*							*	*	*	*	*
Minnesota Importance Questionnaire (MIQ)				*					*	*	*	*	
Minnesota Job Description Questionnaire (MJDQ)				*								*	

INSTRUMENT NAME	CHARACTERISTICS						USE						
	Achievement	Aptitude	Interest	Values/Satisfaction/Environments	Career Development/Maturity	Personality	Elementary School	Junior High/Middle School	Senior High School	2-Year or 4-Year College	Adult Education/Training	Business & Industry/Employment	Disabled or Disadvantaged
Minnesota Rate of Manipulation Test, 1969 Edition (MRMT)		•						•	•		•	•	•
Minnesota Satisfaction Questionnaire (MSQ)				•							•	•	
Minnesota Spatial Relations Test, Revised Edition (MSRT)		•							•	•	•	•	•
Missouri Aptitude and Career Information Inventory (MACII)		•	•						•				
Missouri Occupational Card Sort (MOCS)			•						•	•	•		
Missouri Occupational Preference Inventory (MOPI)			•						•	•	•		
Motivated Skills Card Sort (MSCS)			•	•				•	•	•	•	•	
Multidimensional Aptitude Battery (MAB)		•							•	•	•		•
My Vocational Situation (MVS)					•				•	•	•	•	
Myers-Briggs Type Indicator (MBTI)						•			•	•	•	•	
National Career Aptitude System (NCSA)		•							•	•	•	•	
Neo Personality Inventory (NEO-PI)						•				•	•	•	
New Mexico Career Education Test Series					•				•	•			
Non-Sexist Vocational Card Sort			•	•					•	•	•		

O'Conner Finger Dexterity Test		•						•	•		•	•	•
O'Conner Tweezer Dexterity Test		•						•	•		•	•	•
Occ-U-Sort			•						•	•	•		
Occupational Aptitude Survey & Interest Schedule-2 (OASIS-2)		•	•					•	•				•
Occupational Clues			•	•				•	•	•	•		
Occupational Interest Card Sort (OICS)			•					•	•	•	•	•	
Occupational Stress Inventory (OSI)						•					•	•	
Occupations and Career Information BOXSCORE					•			•	•				
Office Skills Test		•							•	•	•	•	
Ohio Vocational Interest Survey II (OVIS II)			•					•	•	•	•		
Ohio Work Values Inventory				•			•	•	•	•	•		
Pennsylvania Bi-Manual Worksample		•							•		•	•	
Perceptual Speed		•							•	•	•	•	•
Personal Audit						•			•	•	•	•	
Personal Skills Map (PSM)						•	•	•	•	•	•	•	
Personal Style Indicator (PSI)				•		•					•	•	
Personality Research Form (PRF)						•		•	•	•	•	•	
Personnel Tests for Industry-Oral Directions Test (PTI-ODT)		•							•		•	•	•
Picha-Seron Career Analysis (PSCA)						•		•	•	•	•	•	
Pictorial Inventory of Careers (PIC)			•					•	•		•		•
Picture Interest Exploration Survey (PIES)			•					•	•		•		•
Pin Test		•							•		•	•	•
Plan	•	•	•						•				
Planning Career Goals (PCG)		•	•	•	•			•	•				
Position Analysis Questionnaire (PAQ)				•								•	

INSTRUMENT NAME	CHARACTERISTICS						USE						
	Achievement	Aptitude	Interest	Values/Satisfaction/Environments	Career Development/Maturity	Personality	Elementary School	Junior High/Middle School	Senior High School	2-Year or 4-Year College	Adult Education/Training	Business & Industry/Employment	Disabled or Disadvantaged
Position Classification Inventory (PCI)				•								•	
Practical Assessment Exploration System (PAES)	•		•		•			•	•				•
Prep Work Samples	•	•	•						•		•		•
Prevocational Assessment Screen (PAS)		•						•	•		•		•
Principles, Attitudes & Values for Employment (PAVE)				•					•	•	•	•	
Program for Assessing Youth Employment Skills (PAYES)	•	•	•		•				•		•		•
Purdue Pegboard		•							•		•	•	•
Reading-Free Vocational Interest Inventory (RFVII)			•					•	•		•		•
Revised Beta Examination-Second Edition (BETA-II)		•									•	•	•
Revised Minnesota Paper Form Board		•							•	•	•	•	•
Rokeach Value Survey				•				•	•	•	•	•	
Safran Student's Interest Inventory, Third Edition (SSII)			•					•	•				
Sales Attitude Checklist						•						•	

Salience Inventory (SI)				•			•	•	•	•	•	•	
San Francisco Vocational Competency Scale	•	•			•				•		•		•
Satisfaction Research Questionnaire (SRQ)				•							•	•	
Scholastic Level Exam (SLE)		•									•	•	•
Schubert General Ability Battery (GAB)		•							•	•	•	•	
Seashore-Bennett Stenographic Proficiency Test		•										•	
Self Directed Search (SDS)			•					•	•	•	•	•	
Self-Description Inventory						•			•	•	•	•	
Short Employment Tests (SET)		•									•	•	
Short Tests of Clerical Ability (STCA)		•									•	•	
Singer-Loomis Inventory of Personality (SLIP)						•			•	•	•	•	
Sixteen Personality Factors (16PF)						•			•	•	•	•	
Skills Assessment Module (SAM)		•						•	•				•
Skills 2000	•	•							•	•	•	•	
Slaney Vocational Card Sort			•						•	•	•		
Social & Prevocational Information Battery (SPIB)	•				•		•	•	•		•		•
Space Relations (Paper Puzzles)		•									•	•	
Space Thinking (Flags)		•									•	•	
SRA Clerical Aptitudes		•							•	•	•	•	
SRA Mechanical Aptitudes		•							•	•	•	•	
SRA Pictorial Reasoning Test (PRT)		•						•	•	•	•	•	•
SRA Test of Mechanical Concepts		•						•	•	•	•	•	
Stromberg Dexterity Test (SDT)		•								•	•	•	•
Strong Interest Inventory (SII)			•					•	•	•	•	•	
Student Occupational Competency Achievement Testing (SOCAT)	•								•	•	•	•	

	CHARACTERISTICS						USE						
INSTRUMENT NAME	Achievement	Aptitude	Interest	Values/Satisfaction/Environments	Career Development/Maturity	Personality	Elementary School	Junior High/Middle School	Senior High School	2-Year or 4-Year College	Adult Education/Training	Business & Industry/Employment	Disabled or Disadvantaged
Study of Values (SOV)				•					•	•	•	•	
Success Skills 2000	•	•							•	•	•	•	
Survey of Interpersonal Values (SIV)				•					•	•	•	•	
Survey of Personal Values (SPV)				•					•	•	•	•	
Survey of Work Styles (SWS)						•					•	•	
System for Assessment and Group Evaluation (SAGE/C-A-M)	•	•	•			•			•	•	•		•
System 2000	•	•	•						•	•	•	•	•
Talent Assessment Program (TAP)		•						•	•		•		•
Temperament and Values Inventory (TVI)				•		•			•	•	•	•	
Temperament Comparator (TC)						•						•	
Test of Adult Basic Education (TABE)	•								•	•	•	•	
Testing, Orientation, and Work Evaluation in Rehabilitation (TOWER)		•							•		•		•
Tests for Everyday Living (TEL)	•							•	•				•
Thurstone Temperament Schedule						•			•	•	•	•	

Typing Test for Business (TTB)	•									•	•	•	
UNIACT IV			•						•	•			
United States Employment Service Interest Inventory (USESII)			•						•		•		
USES Basic Occupational Literacy Test (BOLT)	•								•		•	•	•
USES General Aptitude Test Battery (GATB)		•							•		•	•	
USES Interest Checklist			•								•	•	
USES Non-reading Aptitude Test Battery (NATB)		•							•		•	•	•
Valpar Component Work Sample System		•							•		•		•
Valpar-17 Pre-Vocational Readiness Battery (PVRB)	•				•			•	•		•		•
Values Scale (VS)				•				•	•	•	•	•	
Vo-Tech Major Card Sort			•					•	•	•			
VOC-TECH Quick Screener (VTQS)		•	•						•		•		•
Vocational Adaption Rating Scales (VARS)	•				•			•	•		•	•	•
Vocational Behavior Checklist (VBC)					•				•		•		•
Vocational Evaluation Systems (Singer)		•	•					•	•		•		•
Vocational Implications of Personality (VIP)						•		•	•	•	•	•	•
Vocational Information and Evaluation Work Samples (VIEWS)		•	•						•		•		•
Vocational Insight and Exploration Kit (VIEK)			•						•	•	•		
Vocational Interest and Sophistication Assessment (VISA)			•		•			•	•		•		•
Vocational Interest, Experience & Skill Assessment (VIESA)			•					•	•	•	•		
Vocational Interest Inventory (VII)			•						•	•			
Vocational Interest Profile Report			•						•				
Vocational Interest Temperament and Aptitude System (VITAS)		•	•						•		•		•
Vocational Learning Styles						•		•	•		•		•
Vocational Opinion Index					•				•		•		•

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INSTRUMENT NAME	CHARACTERISTICS Achievement	Aptitude	Interest	Values/Satisfaction/Environments	Career Development/Maturity	Personality	USE Elementary School	Junior High/Middle School	Senior High School	2-Year or 4-Year College	Adult Education/Training	Business & Industry/Employment	Disabled or Disadvantaged
Vocational Research Interest Inventory (VRII)			•						•	•	•		•
Vocational Training Inventory and Exploration Survey (VOC-TIES)			•					•	•				•
Vocational Transit		•						•	•		•		•
Watson-Glaser Critical Thinking Appraisal		•										•	
Wesman Personnel Classification Test (PCT)		•										•	
Western Personnel Tests (WPT)		•								•	•	•	
What I Like To Do			•				•	•					
Wide Range Employment Sample Test (WREST)	•	•							•		•		•
Wide Range Intelligence-Personality Test (WRIPT)		•				•	•	•	•		•		•
Wide Range Interest Opinion Test (WRIOT)			•				•	•	•		•		•
Wonderlic Personnel Test		•										•	
Word and Number Assessment Inventory (WNAI)	•	•							•	•	•		
Word Processing Test (WPT)	•									•	•	•	
Word Processor Assessment Battery (WPAB)	•									•	•	•	

Work Activities Checklist			•						•				
Work Activities Inventory			•						•				
Work Attitudes Questionnaire						•					•	•	
Work Content Skills Inventory	•	•								•	•	•	
Work Interest Index (WII)			•					•	•		•		•
Work Keys Assessments	•								•	•	•	•	
Work Motivation Inventory (WMI)				•								•	
Work Situations						•			•				
World of Work Inventory (WOWI)	•	•	•	•					•	•	•	•	•

INDEX

-A-

ABCD, 78
Ackerman, Cheryl M. [review by], 283
ACT Career Planning Program—see Career Planning Program, 50
ACT Staff Members [test], 50
Adaptability Test, 415
Addresses of Publishers, 435
Adult Basic Learning Examination, 2nd Edition, 57
Adult Career Concerns Inventory, 242
Adult Personality Inventory, 411
Alwood, James E. [review by], 100
American College Testing [ACT] [test], 124
Anderson, Scarvia B. [review by], 52
Applied Biological and Agribusiness Interest Inventory, 395
Apticom, 63
Aptitudes, 383
Armed Services Vocational Aptitude Battery Career Exploration Program, 71
Ashby, Jeffrey S. [review by], 196
Assessment of Career Decision Making, 248
ASVAB, 71

-B-

Ball Aptitude Battery, 383
Ball Foundation [test], 78
Becker, Ralph L. [test], 325
Becker Work Adjustment Profile, 415
Beggs, Donald [test], 86
Bennett, George K. [test], 90
Bennett Hand Tool Dexterity Test, 389
Bennett Mechanical Comprehension Test, 389
Bolton, Brian [review by], 117
Borman, Christopher [review by], 106
Botterbusch, Karl F. [review by], 133
Bozik, Cathleen M. [review by], 264
Bradley, Richard W. [review by], 73
Briggs, Katherine C. [test], 281
Brooke, Stephanie L. [review by], 222
Brown, Clarence D. [review by], 337
Buck, Jacqueline N. [test], 248

-C-

California Life Goals Evaluation Schedules, 402
California Psychological Inventory, 274
Campbell Interest and Skill Survey, 138
Campbell, David P. [tests], 138, 213
Campbell, Vicki L. [review by], 202
Canadian Occupational Interest Inventory, 395
Cantwell, Zita M. [review by], 326
Card Sorts, 347
Career Action Inventory, 408
Career Adaptive Behavior Inventory, 415
Career and Vocational Form of the SOIO-LA Basic Test, 383
Career and Vocational Interest Inventory, 397
Career Area Interest Checklist, 395
Career Assessment Battery, 395
Career Assessment Inventory—Enhanced and Vocational Versions, 144
Career Assessment Program, 78
Career Attitudes and Strategies Inventory, 408
Career Awareness Inventory, 408
Career Beliefs Inventory, 253
Career Compass, 395
Career Decision Profile, 408
Career Decision Scale, 258
Career Development Inventory, 263
Career Development Profile, 408
Career Directions Inventory, 151
Career Education Readiness Test, 408
Career Evaluation Systems Series 100–300, 415
Career Exploration Inventory, 395
Career Exploration Profile, 383
Career Exploration Series, 396
Career Finder, 396
Career Guidance Inventory, 396
Career Interest Inventory, 90
Career Interests, 396
Career Interest Survey, 396

BEST COPY AVAILABLE

Career Interest Test, 396
Career Inventories for the Learning Disabled, 415
Career Key, 397
Career Leverage Inventory, 409
Career Mastery Inventory, 409
Career Maturity Inventory, 268
Career Occupational Preference Systems Interest Inventory, 156
Career Orientation and Planning Profile, 397
Career Orientation Placement and Evaluation Survey, 402
Career Path Strategy, 409
Career Planning Program, 50
Career Planning System, 397
Career Programs Assessment, 383
Career Skills Assessment Program, 409
Career Suitability Profile, 411
Career Survey, 86
Career Targets, 397
Career Values Card Sort Kit, 356, 406
Career Values Scale, 402
Carney, Clarke G. (test), 258
CDM-R, 172
CGP Research Staff (test), 162
Chronicle Career Quest, 162
Ciechalski, Joseph C. (review by), 222
Clerical Abilities Battery, 389
Clerical Skills Series, 389
CMI, 268
Code of Fair Testing Practices in Education, 457
College Major and Vocational Program Selector, 397
College Major Card Sort, 406
College Major Interest Inventory, 167
Common-Metric Questionnaire, 402
Comprehensive Ability Battery, 383
Comprehensive Career Assessment Scale, 409
Comprehensive Occupational Assessment and Training System, 415
Computer Aptitude, Literacy, and Interest Profile, 389
Computer-Assisted Career Guidance Systems, 373
Computer Competence Tests, 389
Computer Operator Aptitude Battery, 390
Computer Programmer Aptitude Battery, 390
Computerized Career Assessment and Planning Program, 409
Crawford Small Parts Dexterity Test, 390
Crites, John O. (review by), 276
Crites, John O. (test), 268
Curtis Interest Scale, 397
Customer Service Skills Assessment Program, 390

-D-

Daniels, Harry (test), 248
Daniels, M. Harry (review by), 208
Dansky, Howard (test), 63
DAT, 90
Dawis, René V. (tests), 220, 226
Deal Me In Cards, 356, 406
Department of Defense (test), 71
Dial, Jack G. (test), 308
Differential Aptitude Tests, 90
Domino, George (review by), 88
Dvorine Color Vision Test, 390

-E-

Educational Interest Inventory, Revised Edition, 398
Educational Technologies, Inc. (test), 78
Edwards Personal Preference Schedule, 411
Elmore, Patricia B. (review by), 73
England, George W. (test), 226
Emerging Occupations Interest Inventory, 398
Employability Attitudes, 402
Employee Aptitude Survey, 99
Employment Barrier Identification Scale, 416
Employment Readiness Scale, 402
ETSA Tests, 384
Experience Exploration, 398
Explore the World of Work, 398
Explore, 384
Exploring Career Options, 411

-F-

Faldet, Burton (review by), 158
Flanagan Aptitude Classification Test, 384
Flanagan Industrial Tests, 384
Fleishman Job Analysis Survey, 403
Florida International Diagnostic-Prescriptive Vocational Competency Profile, 416
Ford, J. S. (test), 99
Forer Vocational Survey: Men-Women, 411
Fundamental Interpersonal Relations Orientation-Behavior, 411
Fuqua, Dale R. (review by), 139

-G-

Gardner, Eric F. (test), 57
Garfield, Nancy J., 41
Garis, Jeffrey W., 373
GATB, see USES General Aptitude Test Battery, 115
Geist Picture Interest Inventory, 416
General Clerical Test, 390

GIS—see Kuder, Form E
Gordon Occupational Checklist II, 398
Gordon Personal Profile-Inventory, 412
Gough, Harrison G. (test), 274
Green, Joe A. (review by), 65
Grimsley, G. (test), 99
Group Interest Sort, 398
Guilford-Zimmerman Aptitude Survey, 384
Guilford-Zimmerman Interest Inventory, 399
Guilford-Zimmerman Temperament Survey, 412

-H-

Hackman-Gaither Interest Inventory, 399
Hall Occupational Orientation Inventory, 403
Halpern, Andrew (test), 331
Hansen, Jo-Ida C. (review by), 232
Hansen, Jo-Ida C. (test), 213
Harmon, Lenore W. (review by), 259
Harren, Vincent A. (test), 248
Harrington-O'Shea Career Decision-Making System—Revised, 172
Harrington, Thomas (test), 172
Harris, Jeffrey A. (test), 63
Hay Aptitude Test Battery, 384
Healy, Charles C. (review by), 269
Hecht, Deborah (review by), 332
Herr, Edwin L. (review by), 196
Herr, Edwin L., 13
High School Career-Course Planner, 399
Hinkle, J. Scott (review by), 146
Hoffbauer, Diane (review by), 179
Holland, John L. (test), 206
How Well Do You Know Your Interests?, 399
Hudson, John (test), 131
Hudson, Karen (test), 131

-I-

IBCD, 78
IDEAS, 178
Individual Career Exploration, 399
Individual Style Survey, 403
Industrial Reading Test, 385
Interest Determination, Exploration and Assessment System, 178
Intuitive Mechanics, 390
Inventory for Counseling and Development, 412
Inventory of Interests, 399
IPI Aptitude-Intelligence Test Series, 385
Irvin, Larry (test), 331
It's in the Cards, 406

-J-

Jackson, Douglas N. (tests), 151, 183, 294
Jackson Personality Inventory, 412
Jackson Vocational Interest Survey, 183
Jastak, Joseph F. (test), 341
Jastak, Sarah (test), 341
Jenkins Activity Survey, 412
Jepsen, David A., 425
Jepsen, David A. (review by), 184
Jewish Employment Vocational Service Work Sample System, 416
Job Awareness Inventory, 410
Job Descriptive Index, Revised, 403
Job Effectiveness Prediction System, 385
Job Search Assessment, 410
Job Style Indicator, 403
JOBTAP II, 385
Johansson, Charles B. (tests), 144, 178
Johnson, Richard W. (review by), 168
Jordaan, Jean P. (test), 263
Judgement of Occupational Behavior-Orientation, 399

-K-

Kapes, Jerome T., 1, 381, 425, 473
Karlsen, Bjorn (test), 57
Key Educational Vocational Assessment System, 416
Knapp, L. (test), 156
Knapp, R. R. (test), 156
Knowledge of Occupations Test, 410
Koschier, Maryanne (test), 258
Kosuth, Thomas F. (test), 315
Krumboltz, John D. (test), 253
Kuder Career Development Inventory, 400
Kuder General Interest Survey, Form E, 189
Kuder, Frederic (tests), 189, 194
Kuder Occupational Interest Survey, Form DD, 194

-L-

Learning Styles Inventory, 416
Lenz, Janet G., 373
Lindeman, Richard H. (tests), 242, 263
Link, Robert (test), 331
Livers, David L. (review by), 163
Lofquist, Lloyd H. (tests), 220, 226
Lynch, Patricia S. (review by), 321

-M-

Manipulative Aptitudes Test, 391
Mastie, Marjorie, M., 1, 31
Matlock, Susan G. (review by), 302
McCarron-Dial System, 308
McCarron, Lawrence T. (test), 308
McDivitt, Patricia Jo, 361
McQuarrie Test for Mechanical Ability, 391
Mechanical Movements, 391
Mehrens, William A. (review by), 190

Mehrens, William A., 23
Meyer-Kendall Assessment Survey, 412
Micro-Tower, 417
Microcomputer Evaluation and Screening Assessment, 417
Microcomputer Evaluation of Career Areas, 417
Miller, Robert J. [review by], 179
Milwaukee Academic Interest Inventory, 400
Minnesota Clerical Test, 391
Minnesota Importance Questionnaire, 220
Minnesota Job Description Questionnaire, 403
Minnesota Rate of Manipulation Test, 391
Minnesota Satisfaction Questionnaire, 226
Minnesota Spatial Relations Test, Revised Edition, 391
Missouri Aptitude and Career Information Inventory, 385
Missouri Occupational Card Sort, 352, 406
Missouri Occupational Preference Inventory, 355, 406
Moran, Wendy J., 347
Motivated Skills Card Sort, 357, 407
Mouw, John T. [test], 86
Multicultural Assessment Standards, 463
Multidimensional Aptitude Battery, 385
My Vocational Situation, 410
Myers-Briggs Type Indicator,281
Myers, Isabel Briggs [test], 281
Myers, Roger A. [test], 263

-N-

National Career Aptitude System, 385
Neidert, Gregory [test], 131
Neo Personality Inventory, 413
Nevill, Dorothy D. [tests], 231, 236
New Mexico Career Education Test Series, 410
Newman, Jody L. [review by], 139
Nighswonger, Wilton E. [test], 336
Non-Sexist Vocational Card Sort, 351, 407
Norris, Debra S., 373
Norton, Jennifer J. [review by], 215

-O-

O'Conner Finger Dexterity Test, 391
O'Connor Tweezer Dexterity Test, 392
OASIS-2, 104
Occupational Aptitude Survey and Interest Schedule-2, 104
Occupational Clues, 400
Occupational Interest Card Sort, 356, 407
Occupational Stress Inventory, 288
Occupations and Career Information BOXSCORE, 410
Occ-U-Sort, 353, 407
Office Skills Test, 392
Ohio Department of Education [test], 86
Ohio Vocational Interest Inventory, 2nd Edition, 200
Ohio Work Values Inventory, 403
Olson, Gerald T. [review by], 302
O'Shea, Arthur [test], 172
Osipow, Samuel H. [tests], 258, 288
Osterlind, Steven J. [review by], 112

-P-

Parker, Randall M. [test], 104
Parrish, Linda H. [review by], 321
Pennsylvania Bi-Manual Worksample, 392
Perceptual Speed, 392
Personal Audit, 413
Personal Skills Map, 413
Personal Style Indicator, 404
Personality Research Form, 294
Personnel Tests for Industry-Oral Directions Test, 417
Peterson, Gary W. [review by], 80
Peterson, Gary W., 373
Picha-Seron Career Analysis, 413
Pictorial Inventory of Careers, 315
Picture Interest Exploration Survey, 417
Pinkney, James W. [review by], 264
Pin Test, 392
Plan, 386
Planning Career Goals, 386
Portfolios, 361
Position Analysis Questionnaire, 404
Position Classification Inventory, 404
Powell, Thomas E. [review by], 290
Practical Assessment Exploration System, 417
Prediger, Dale J., xiii, 41, 463
Prep Work Samples, 418
Prevocational Assessment Screen, 320
Publishers' Addresses—see Addresses
Principles, Attitudes & Values for Employment, 404
Program for Assessing Youth Employment Skills, 418
Purdue Pegboard, 392

-R-

Raffeld, Paul [test], 331
Reading-Free Vocational Interest Inventory, 325
Reardon, Robert C., 373
Responsibilities of Users of Standardized Tests, 445
Revised Beta Examination—Second Edition, 386

Revised Minnesota Paper Form Board, 392
Ripley, Robert (test), 131
Rokeach Value Survey, 404
Rosinek, Michelle (test), 320
Rounds, James (review by), 243
Ruch, F. L. (test), 99

-S-

Sabers, Darrell L. (review by), 152
Safran Student's Interest Inventory, 3rd Edition, 400
Sales Attitude Checklist, 413
Salience Inventory, 231
Sampson, James P. Jr., 373
Sander, Daryl (review by), 276
San Francisco Vocational Competency Scale, 418
Satisfaction Research Questionnaire, 404
Saunders, Denise E., 373
Scholastic Level Exam, 386
Schubert General Ability Battery, 386
Scruggs, Cathy (review by), 126
SDS, 206
Seashore-Bennett Stenographic Proficiency Test, 393
Seashore, Harold G. (test), 90
Self-Description Inventory, 413
Self-Directed Search, 206
Sharf, Richard S. (review by), 249
Short Employment Tests, 393
Short Tests of Clerical Ability, 393
Singer-Loomis Inventory of Personality, 413
Sixteen PF Personal Career Development Profile, 300
Skills 2000, 386
Skills Assessment Module, 418
Slaney Vocational Card Sort, 350, 407
Slaney, Robert B., 347
Slaney, Robert B. (review by), 237
Smith, Jeff (test), 86
Social and Prevocational Information Battery—Revised, 331
Solly, David C. (review by), 311
Space Relations (Paper Puzzles), 393
Space Thinking (Flags), 393
Splete, Howard, xiii
Spokane, Arnold R. (test), 288
SRA Clerical Aptitudes, 393
SRA Mechanical Aptitudes, 393
SRA Pictorial Reasoning Test, 394
SRA Test of Mechanical Concepts, 394
Stone, Elizabeth (review by), 93
Strausberger, Scott J., 373
Stromberg Dexterity Test, 394
Strong Interest Inventory, 213
Strong, Edward K. (test), 213
Student Occupational Competency Achievement Testing, 387
Study of Values, 404
Success Skills 2000, 387
Suddarth, Barbara H. (review by), 237
Super, Donald E. (tests), 231, 236, 242, 263
Survey of Interpersonal Values, 405
Survey of Personal Values, 405
Survey of Work Styles, 414
System 2000, 387
System for Assessment and Group Evaluation/Compute-A-Match, 387

-T-

Talent Assessment Program, 336
Taylor, Ronald G. (test), 167
Temperament and Values Inventory, 414
Temperament Comparator, 414
Test of Adult Basic Education, 111
Testing, Orientation, and Work Evaluation in Rehabilitation, 418
Test for Everyday Living, 418
Thomas, Stephen W. (review by), 342
Thompson, Albert S. (tests), 242, 263
Thompson, Bruce (review by), 283
Thurstone Temperament Schedule, 414
Tinsley, Howard E. A. (review by), 296
Tittle, Carol Kehr (review by), 332
Typing Test for Business, 394

-U-

UNIACT IV, 400
United States Employment Service (test), 115
User's Matrix, 473
USES Basic Occupational Literacy Test, 419
USES General Aptitude Test Battery, 115
USES Interest Checklist, 400
USES Interest Inventory, 115
USES Non-reading Aptitude Test Battery, 419

-V-

Vacc, Nicholas A. (review by), 146
Vacha-Haase, Tammi, 381, 473
Valpar Component Work Sample System, 419
Valpar-17 Pre-Vocational Readiness Battery, 419
Values Scales, 236
Vansickle, Timothy R. (review by), 174
VOC-TECH Quick Screener, 387
Vocational Adaptation Rating Scales, 419
Vocational Behavior Checklist, 419
Vocational Evaluation Systems, 419
Vocational Exploration and Insight Kit, 354
Vocational Implications of Personality, 414

Vocational Information and Evaluation Work Samples, 420
Vocational Insight and Exploration Kit, 407
Vocational Interest and Sophistication Assessment, 420
Vocational Interest, Experience & Skill Assessment, 401
Vocational Interest Inventory, 401
Vocational Interest Profile Report, 401
Vocational Interest Temperament and Aptitude System, 420
Vocational Learning Styles, 420
Vocational Opinion Index, 420
Vocational Research Interest Inventory, 401
Vocational Training Inventory and Exploration Survey, 420
Vocational Transit, 421
Vo-Tech Major Card Sort, 407

-W-

Wade, John C., 347
Wall, Janet E. (review by), 254
Walter, Verne (test), 300
Warren, N.D. (test), 99
Watson-Glaser Critical Thinking Appraisal, 387
Weiss, David J. (tests), 220, 226
Wesman, Alexander G. (test), 90
Wesman Personnel Classification Test, 388
Westbrook, Bert W. (review by), 215
Western Personnel Tests, 388
What I like To Do, 401
Whetstone, Robert D. (test), 167
Whitfield, Edwin A., 1
Wick, John (test), 86
Wickwire, Pat Nellor (review by), 158
Wide Range Employment Sample Test, 421
Wide Range Intelligence-Personality Test, 421
Wide Range Interest Opinion Test, 341
Wilde, Caroline K., 373
Williams, Robert T. (review by), 59
Willson, Victor L. (review by), 93
Winer, Jane (test), 258
Wircenski, Jerry L. (review by), 316
Wonderlic Personnel Test, 388
Word and Number Assessment Inventory, 388
Word Processing Test, 394
Word Processor Assessment Battery, 394
Work Activities Checklist, 401
Work Activities Inventory, 401
Work Attitudes Questionnaire, 414
Work Content Skills Inventory, 388
Work Interest Index, 421
Work Keys Assessments, 124
Work Motivation Inventory, 405
Work Situations, 414
Work Skills Development Package, 421
Work Values Inventory, 405
World of Work Inventory, 131

-Y-

Yanico, Barbara (test), 258

-Z-

Zytowski, Donald G. (review by), 227

NOTES